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THE TRANSACTIONS

OF THE ANNUAL MEETING

OF THE

ASSOCIATION

OF

MILITARY SURGEONS

OF THE

NATIONAL GUARD

OF THE

UNITED STATES.

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OF THE

SECOND ANNUAL MEETING

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Association of Military Surgeons

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National Guard of the United States.

HELD AT

MEMORIAL HALL, ST. LOUIS, MO.,

ON THE

19th, 20th and 21st of April, 1892.

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HELD AT MEMORIAL HALL, ST. LOUIS, MO., ON THE 19TH, 20TH AND 21ST OF APRIL, 1892.

The Convention was called to order at 10:30 a. m. by Lieut.-Col. E. Chancellor, Chairman Committee of Arrangements, and opened with prayer by the Rev. John Snyder, D. D.

Col. Chancellor introduced David R. Francis, Governor of Missouri, who delivered the address of welcome on behalf of the Missouri National Guard, as follows:—

MR. CHAIRMAN AND GENTLEMEN: I am here as the Commander-in-chief of the National Guard of Missouri, to welcome to the State, the members of the Association of Military Surgeons of the National Guard of the United States, upon this, the occasion of their second meeting.

The main object of this organization, as I understand it, is to promote and improve the science of military surgery, and by an interchange of views and narration of observances and expe-

riences, to better prepare yourselves to discharge the honorable and patriotic duties which you have assumed as citizen soldiers of the Republic.

Proficiency in any honest and commendable pursuit, is worthy of earnest effort, but when that pursuit is without compensation, and as membership in the National Guard offers only remote promise of famous distinction, that avocation requires a high order of men as its followers. Ours is not a government of force; we believe that all just powers of government are derived from the consent of the people; the sober second thought of the American citizen is the cohesive force, and the reliable safeguard of the Republic. Opposition to authority is by it condemned and annihilated, and it will as speedily, and as surely shake from place and power him who abuses or misuses the authority given him. A public trust is to be exercised by him who holds it for the interest of the people, and not for his own benefit or aggrandizement. So, that in this Republic, we don't need a strong military power to protect us from the ever centrifugal or centripetal tendencies of society. History teaches us, however, that that nation which would maintain the respect of the powers of the earth, must have ever at its call an organization prepared to demand its rights, to defend its honor and uphold its flag.

The National Guard of the United States is a credit to the Republic, composed of citizens of the various States, who not only maintain and quarter themselves, but who, whilst preparing themselves for hours of peril and emergency, are constantly adding to the wealth of the nation. The National Guard of the United States is ever ready to obey the call of its country. In this State it has labored under great difficulties and disadvantages. The minimum of seventeen hundred men for the State of Missouri, is fixed by the Federal government, whilst a maximum membership of twenty-five hundred is fixed by our State statutes, and never, until 1891, has the State government ever contributed one dollar toward the maintenance of the National Guard. During all this time, however, at any rate, during the last 19 or 20 years, there has been maintained in the city of St. Louis, and during a great portion of that time in other sections of the State, branches of the National Guard, who were ever ready to obey the

call of those in authority; to preserve peace and to protect life and property. That organization has been maintained at the individual expense of those composing it.

Therefore, gentlemen, I say that he who prepares himself in time of peace to serve his country in her hour of peril, is worthy of all emulation. His intelligent service in the hour of peril is worth that of twenty of his fellows, equally courageous and patriotic, but unskilled and inefficient. But, I believe this is a branch of the medical profession as well as of the military arm of the government. We recognize in this Association of Military Surgeons of the National Guard of the United States, men who are eminent in their profession, men upon whom demands are often made which in order to be met they must ignore their own interests. Men are here assembled, representing Military Surgeons of the United States, whose professional reputation is not confined to this country. We welcome you therefore, gentlemen, not only as members of the National Guard of the United States, but as eminent physicians.

I believe I said that the object of your organization was mainly, as I understood it, to promote the science of military surgery, and that is the main object of this meeting, but, in addition to that, you have met here, I should say, for the purpose of promoting the acquaintance among the different branches of the National Guard.

We welcome you, therefore, also as citizens of this Republic, men to whom we desire to extend the right hand of fellowship, men who have common interests, and on behalf therefore of the National Guard of Missouri, on behalf as well, as a citizen of this commonwealth, whom I also have the honor to represent in a civil capacity, I say to you, you are welcome to the State of Missouri.

Col. Chancellor next presented Dr. T. F. Prewitt, President of the State Medical Society, who delivered an address on behalf of the medical profession:—

Gentlemen of the Association of Military Surgeons of the National Guard: The pleasant duty has devolved upon me of

welcoming you, on behalf of the medical profession of the State of Missouri, to the metropolis of our State — the city of conventions.

I can assure you of the hearty greeting and generous hospitality which has ever characterized St. Louis in her treatment of the strangers within her gates. In extending to you a cordial welcome, we would not have those of you who are from a distance, feel that you are aliens to the profession here. Medicine erects no barriers, recognizes no lines, geographical, political or religious. The medical profession wherever found are but component parts of one great whole — waves of one great sea.

Though you invade our city in military guise, there will be no sentinels to accost you save the whole-souled citizens, bidding you welcome, no challenges save to hospitable bouts, in which, I dare say, you will be able to hold your own. The badge you wear as members of this association, will be an "open sesame" to the hearts and homes of the profession and our citizens.

Your assemblage here, we recognize as an exprsssion of that restless activity of thought that characterizes the present age in medicine, as in all other fields of human effort. No era of the past has ever manifested such tireless energy in all departments of medicine. Never has there been witnessed such numerous assemblages of medical men, in congresses, in associations, in societies. Books and journals are too slow for this electric age. The "thoughts that breathe, the words that burn" cannot wait this slow dissemination, but seek instant expression and a ready audience, as they leap forth, Minerva like, from the fertile brain of the student and investigator.

We welcome you, too, as the latest accession to the ranks of the organized forces enlisted in the work of medical progress. So distinguished a body of men as compose this association, aside from the special purpose of this organization, must needs do good work in the cause of science.

So long as nations go to war, so long indeed as the millennium is delayed, so long must there be a field for the military surgeon. He is, to a certain extent, an anomaly in the profession. Like all things extant, according to Darwin, he is the product of evolution. In the savage era, the relations of the embryo medical man

to the armed forces in war is an unknown quantity. His functions, like his knowledge, were limited. The wounded of the victors had such care, no doubt, as he could bestow upon them, the wounded of the vanquished were speedily dispatched, most likely, as benefited the logic of war.

With the progress of civilization, an organized medical staff became a feature of all armies of so-called civilized nations, while with the development of that chivalric courage that disdained to strike a fallen foe, the wounded of the vanquished, like those of the victors, were assigned to the surgeon's care. To-day the medical staff of the army stands forth. I had almost said, the one humane feature amid the fierce play of savage passions that war begets. The thin veneering of civilization that modern warfare assumes, concedes to the surgeon after the barbaric fury of conflicting armies has expended itself in killing as many as possible, the poor privilege of rescuing from death and suffering the victims of the strife. He follows in the wake of the sanguinary cyclone to minister to the needs of those whom shot and shell have spared, and his professional instincts and professional training, lead him to see in the sufferers before him, not friends and foes, but human beings, needing his aid. With us who have practically no standing army, where the bulwark of our defense is the national guard of citizen soldiery, no one will question the wisdom of organizing a body of intelligent, educated, trained surgeons, ready to enter the field with every regiment that the fortunes of war may call into the service.

Such an ideal organization we have before us to-day, and should grim-visaged war confront us in the future, the medical profession will have no cause to blush for such military representatives, or to deplore the fate of the unfortunates who may fall into their hands. Let us hope, however, that it will be long before such stern duties shall devolve upon you or your successors. Let us hope, indeed, that nothing more arduous may be exacted of you, for many years to come, than the preparations of interesting papers for your annual meetings, and doing justice to the exactions of hospitable hosts.

Again, gentlemen, I extend you a cordial welcome, and wish you a pleasant and successful meeting.

Hon. E. A. Noonan, mayor of the city of St. Louis, was next introduced and delivered the following address of welcome to the city of St. Louis: —

Mr. President, Ladies and Surgeons of the National Guard of our Country: To say that the citizens of our city welcome you, is to say something that is unnecessary, but to say rather that they are complimented by your being in their midst, is to say something that we feel. You have not sent us tens of thousands of human beings to add to the coffers of the shop-keeper, nor perhaps will you be noticed in the great half million of people by the great masses, and in the purely cold and merchandise sense, your coming and your going may not be strikingly noticed by the great multitude who of late years look upon the building of a city, as the coming into it of revenue. But in the greater and higher sense, in the nobler and through a greater channel, you have brought into the city of St. Louis for perhaps its first time, the representative intellect and development of the grandest science of life, one that for centuries marched slowly and kept in the rear very much of an active and evoluting civilization, but a profession that has within fifty, aye, within twenty years marched with strides more rapid, and fraught with more good to the human family, I think I might safely say, than all other movements of man combined. It is well to solve the mysteries of the human frame, it is well to familiarize oneself with the rocks or with the plant life, and through these to become somewhat familiar with the great field spreading out before those who are disposed to send their minds in that direction. These are fields that of late years, or within half a century, have brought home to all of us, a further recognition of the absolute proposition of the existence of a God, of a Creator, and with these wonderful things, this late creation of civilization, this evolved creation of this part of the nineteenth century, stands in wonderment. But, apart from these fields, and into a field more practical and more wonderful still has gone the surgeon. He has utilized the nerve, the muscle, the transplanting of flesh, the opening up of the body where dangerous wounds, that until within a few years ago were always

in the history of them considered fatal, but which now are not so regarded. He has attached bone to bone, he has so familiarized himself with the functions and purposes of the organs and parts of the human body, that all its mysteries stand as open to him as a book, and in doing this curiosity alone has not been satisfied, nor has science been satisfied, but humanity has been blessed, and to the surgeon, after the physician, the modern world owes more than to any other master of any other science governed by man.

Now, gentlemen, I will not delay you, I am sorry the day is somewhat dark, but these days come and go very rapidly in this western city, to-morrow may greet you, a beautiful spring-like morning, and I say to you from the good people of our city that there is much to be seen in this great western metropolis, apart from our pleasant social life, apart from our generous natures that all the world admits, is innate, which apart from our ability to entertain without annoying, apart from all these we are situated amidst the beautiful in this western world, our river, our parks, our prairie lands, our adjacent mountains, our rich country, all these things will interest the thoughtful. The brightest garden perhaps on the planet is within three or three and a half miles of this spot, reached by car line quickly. I know the ladies and gentlemen will appreciate a visit there. Our parks are singularly beautiful. Across that great bridge there is much to be seen that perhaps is not rivaled, unless it is from the Brooklyn bridge, and none other. And while this Convention is in session, I know the doctors of this city will make your life so pleasant here that you will long remember the agreeable, cultured, appreciative city of the Mississippi Valley, her great metroplis, and her grandest city.

Now, Mr. President, I will conclude by simply wishing that your stay with us will be perhaps as pleasant, as it ever was or ever will be in any other large city in this country. I thank you for your attention.

Col. Chancellor next introduced Lieut.-Col. Charles R. Greenleaf, assistant medical purveyor of the United States Army, who delivered an address on "The Practical

Duties of an Army Surgeon in the Field, During Time of War."

Mr. President and Gentlemen of this Association: I am charged by the Surgeon-General of the Army to convey to you his hearty appreciation of the object of the Association and his cordial good wishes for its success; he regrets that his public duties in Washington prevent him from being with you, and directs me to represent him and to express the assurance of his desire and intention to co-operate with and assist you in every way possible. At his request the Honorable Secretary of War has authorized an exhibit of the field equipment of the hospital corps of the United States Army, that has recently been adopted, and has detailed Major Hoff, commanding officer of the company of instruction, with a detachment of his men, to give you an object lesson in the new drill of the corps, together with such explanations as will enable you to fully appreciate its working methods. He further instructs me to say that it will give him great pleasure to furnish any information concerning the regulations of the service, its forms and methods of business, and trusts that you will have no hesitancy at any time in calling upon him for the furtherance of the great work in which we are jointly engaged for the common interest of our country.

Since the meeting for organization in Chicago, at which I had the honor of being present as your guest, I have constantly had in mind the object, and trust that you will not deem me officious in renewing the suggestions touched upon at that term by my friend Col. Irwin on the administrative duties of an army surgeon in the field in time of war, a subject that cannot be too often referred to, nor too closely studied.

I assume that you have joined the National Guard and wear its uniform, not for the purpose of a holiday parade, but for the serious business of performing the duties of a sanitary soldier, which are to be learned only by a careful study of military regulations and military hygiene.

With surgery and medicine you are admittedly familiar; their practice in military life does not differ from their practice in civil life, save in the circumstances which surround them; and in a

meeting of this character may properly meet with scant consideration. The ever-present necessity with the medical officer is a comprehensive knowledge of military affairs. No other officer of the army is required to be individually familiar with the duties of every other military department in addition to his own, and yet this is the task which the sanitary soldier must master if he wishes to be successful in his duties in the field.

Imagine, if you please, that we are to-day at war with a foreign nation and have an army of occupation in the field of one hundred thousand men. That army is necessarily made up of members of the National Guard, for in time of war the regular army is but a nucleus, or color guard of the fighting force. The administration of its medical department consists of 2,600 officers and men; under ordinary circumstances five per cent. of the command, or 5,000 men are constantly sick and wounded, while after a battle, the non-effective list is swelled to ten per cent., or 10,000 men. An accident of date of commission may make any one of you gentlemen the medical director of this force. What would you do after reporting to the commanding general and finding yourself face to face with the responsibilities of such a position? There is no time to learn and no one to advise with; — each branch of the service has all it can do for itself, and you are practically alone, with the knowledge that each day of unaccustomed field life will, slowly but surely, add to your minimum of non-effective sick. You also know that there must quickly be a fight, involving a necessity for the care of an additional ten per cent. of wounded. The efficiency of that army, the care of its sick and wounded, and your own reputation, depends upon your doing the right thing, THEN AND THERE.

If advantage has been taken of the opportunities furnished to all surgeons of the National Guard, for thoroughly learning these comprehensive duties, you will find that familiarity with those of an adjutant enable you immediately to establish order through a record system; to secure needful shelter by correctly preparing the necessary requisitions upon the quartermaster, to secure proper food in a similar manner from the commissary, to properly place and regulate the men of your hospital corps as any regimental or company commander would do, and finally to pre-

serve discipline and so co-ordinate the several military systems that all shall work as one harmonious whole under the experience of your training as a commanding officer.

Our system of property accountability is such that nothing can be had unless formal requisition is made for it and the "how to do it" is the *open sesame* to military as well as to any other success. No words of mine can possibly give you an idea of the confusion, the delay, the damage to property and the loss of life that follows the work of the man who knows only "*how not to do it.*"

In the annual encampments of the National Guard you have opportunities that are the envy of every one of your colleagues of the regular army for practically studying this essential, indeed, I may safely say *dominant*, feature of military life. The force with which you serve is one of "volunteers" in the fullest meaning of the word; officers and men are present because they like the service and are anxious to learn; they are full of zeal and enthusiasm and ready to co-operate heartily with you in whatever is done. It is here that you can practically apply the theoretical study of your armories and offices, organize your field hospitals, open your record books and drill your hospital corps.

The occasions for assembling considerable numbers of the regular army are few, and our medical officers have but little opportunity to make practical tests of the equipment that has been furnished them by the government, or to apply experimentally new ideas they may have for advancement; for which reason the various encampments of the National Guard have been watched with keen interest and every efficient innovation has been considered.

The present change in the forms of many articles of our materia medica is the result of observation by our medical officers of the methods of supply in these camps especially in the great encampment at Mt. Gretna, of the Pennsylvania National Guard, and many more things have been found here that we might adopt with profit.

Next in importance to this object lesson is the establishment of an officers' school; where the administrative duties should be discussed exclusively. No strictly professional talk should be

permitted, but the various official forms should be studied, filled out to meet hypothetical cases, and if doubtful questions concerning them arise, submitted to the surgeon-general for decision; here are to be discussed the methods of transporting wounded by ambulance, railway train or transport, the organization of hospitals for fixed or flying columns, the methods for recording and reporting the diseases and injuries of sick and wounded, and many other matters of similar import. The field is vast and fallow; new methods are slow of growth in national affairs, but among the greatest military triumphs of modern times are those that have been won by working members of our own guild; all countries sought in vain for a means of speedy communication in military campaigns until Assistant-Surgeon Myers, of the United States Army, gave them the signal code; the problem of rapid firing weapons was unsolved by the combined intelligence of ordnance officers until Dr. Gatling solved it in the wonderful arm that bears his name; the question of rapid transit through crowded cities puzzled the brains of great merchants and wise commanders until Brigade Surgeon Gilbert, U. S. Volunteers, solved it, as you may see in the elevated railways, and the cry of the sufferer has been going to heaven from the battlefields of all nations, and during all time, until our own Jonathan Letterman of the Army of the Potomac gave us that magnificent ambulance service which has been adopted by the armies of nearly every civilized nation, and has done more than anything else to alleviate the horrors of war.

This work was not accomplished by men who were safely ensconced in stone houses or hospitals in the rear; so-called "non-combatants," for whom the folds of the red-cross flag are popularly supposed to be a sheltering refuge; but by men on duty with the firing line — never was there a greater misnomer than that of "non-combatant" for an army medical officer; never a greater slur on the perilous service he must constantly perform. The graves of 157 of our comrades who fell while doing duty on the firing line in the great battles of the war, and in Indian campaigns are mute but powerful protests against such misconception of a term; the voices of over 1,000 of our men who were wounded while similarly engaged, join in these protests, and the 13 bullet

rents in the red-cross guidon (a mere handkerchief in size) borne on the ambulance in the Indian fight at Wounded Knee, are grim and ironical commentaries on its efficiency as a means of protection. No, gentlemen, we share equally with the soldiers of the line in the perils of war, where *all* participants are "combatants;" we seek no immunities, but claim only a just recognition of our rank and status *as* soldiers.

The future of the medical department is in your hands, and the golden opportunity for establishing its character will be presented at Chicago, in 1893, where, at the World's Fair, it is believed, will be assembled the largest force of civilian soldiery that this country has seen since the war, and military men from home and abroad will in this *national* gathering, criticise the efficiency of your home instruction and judge of its value in time of war. It requires no prophet to declare that this work will be but the index to a success in the larger field similiar to that which in the past has covered the name of the citizen soldier with historic laurel.

The next address was delivered by Lieut. Angelo Festorazzi, of the National Guard of Alabama, which was a response on behalf of the Association.

Mr. Chairman, Fellows of the Association of Military Surgeons of the National Guard of the United States, Ladies and Gentlemen: Our distinguished President has accorded to me the honor of responding to the cordial welcome which has so warmly and eloquently greeted us.

It would have been more agreeable to me, and I am sure more entertaining to this large audience, had the duty fallen upon some member of the Association better versed in language, and more gifted in happy thought than myself, but should I not maintain the honor of the position assigned me, I beg that you will ascribe the failure to any cause save want of interest in our organization, or lack of appreciation of the noble and generous sentiments that have been so gracefully expressed.

The great State of Missouri, through her eloquent chief magistrate, bids us welcome. The city of St. Louis, one of the commercial centers of this land, rising in all her grandeur and

majesty upon the banks of the Father of Waters, through her popular and efficient highest executive officer, extends to us the hand of welcome.

Our professional brothers of this city, true to those fraternal feelings that animate the profession everywhere, speaking through one of their eminent fellows, bid us welcome. This outpouring of beauty and chivalry, which I see filling every nook and corner of this magnificent hall, fortifies and strengthens every word of welcome uttered by the speakers.

To say that the sentiments expressed have deeply touched our hearts, and aroused in them harmonious and responsive echoes, is to but feebly reflect the feelings which glow in the bosoms of the members of "The National Guard of Military Surgeons" here present.

A reception so enthusiastic and cordial can but impress us that our choice of a meeting place was indeed fortunate and happy. Since this audience has manifested so much interest in our meeting, they are entitled to know something of the plans and purpose of our organization. It had its birth about one year ago. Vividly do I recall the feelings with which I witnessed the first assemblage of Military Surgeons of the National Guard of the United States. A new estimate of the profession was formed in my mind, and my heart swelled with honest pride as I met the gifted members assembled in scientific council, sacrificing their time willingly, aye, cheerfully, in the pursuit of measures to elevate their science, to pluck from the destroying angel's quiver some of his envenomed shafts, and to interpose between suffering humanity and ills that threaten the life of the soldier in camp, as well as on the battle field.

The annual meeting of our Association will, and must, be full of profit to each one of us individually. The kindly feelings, the warm sympathies, the spirit of generous emulation which they inspire, will alone make us feel that our convocations are not mere mockery nor hollow forms. The familiar interchange of opinions, the many new facts and ideas introduced in the papers that will be read, and the discussions that will ensue, all combine to make a volume of useful and practical information which we may treasure up for future use.

The spirit and success of our Association must depend upon the individual exertion of its members. As every drop helps to make up the mighty ocean, so every ray of medical light from whatever source will add to the daily increasing splendor of the sun of military surgery which is rising towards its meridian splendor.

Fellow comrades, we are here to-day in a dual capacity, as surgeons of the National Guard of our country, and as physicians to the public. All recognize that the life of the physician is no flowery ped of ease. Labor, toil and vigilance, are the records of his daily life, and the recompense, though at times regarded by the outside world as in excess of labor performed, yet how few can trace the constant drawings upon his mental and physical constitution.

But as military surgeons, our path would be still more strewn with thorns and perils in our efforts to repair the ghastly wounds of grim-visaged war. Many think that the courage of the battle-field is easily aroused, and that under the stimulus of waving banners and pealing bugles cowards may become courageous, brave, and daring; but not so with the military surgeon. He must coolly discharge his duty without such aids to his courage. A gross fallacy exists in the minds of many people, namely, that army surgeons while attending the wounded in an engagement, are in the rear and out of danger. Such is not the fact. The duty of the medical officer takes him on the fighting line to render immediate aid to those shot down by bullets that are no respecters of individuals. Surgeons often render professional assistance to the wounded at the place where they fall. All that is usually done under the fire of the enemy, and the surgeon freely jeopardizes his safety and life while coolly discharging his professional duties.

With all these responsibilities resting upon us, with all these cares before us, there should be a spirit awakened in every member of this Association that will make him feel that he has higher objects in view than mere sordid interests; that place a hope before his eyes that shines brighter, far brighter, than the glittering of gold, and while pursued with that energy which the desire to do well, to deserve immortality, inspires, must elevate him as

aspirant, and ennoble the profession to which he belongs, and give vitality and permanency to all his efforts for the public good.

When I realize that we are assembled here to-day as military men, coming from every portion of our great Republic, a most happy thought enters my mind. As I gaze upon this large, refined and intelligent audience, I am proud that the fair ones, as well as the chivalry of St. Louis, bear us witness. The thought to which I allude is this:

The fact that the Association exists, the fact that we are mingling socially and professionally together, adds another demonstration to the many already made, that sectional feeling no longer exists between us, but that peace reigns supreme.

This gathering is another declaration to the world that in the United States, there is no more South, no more North, but a united country. Boldly and openly it manifests to all that the once bleeding and helpless hand of the South is now grasped in friendship, and caressed in love, by the great and powerful North. It proclaims to the world that the people of the North, the people of the East, the people of the West, and the people of the South, with united hands have taken the bloody shirt that has been flaunted into our eyes for over twenty years, and folded it up and buried it so deep that the hand of resurrection will never find it.

They have buried it in some secluded spot with no head-stone to mark its eternal resting-place. It fulfills the words in the prophecy of Webster, "Standing hand to hand, and clasping hands, we should remain united as we have been, citizens of the same country, members of the same government, united, all united, and united forever." There have been difficulties, contentions and controversies, but

> "Those opened eyes
> Which like the meteors of a troubled heaven,
> All of one nature, of one substance bred,
> Did lately meet in the intestine shock,
> Shall now, in mutual well beseeming ranks,
> March all one way."

And now, kind Citizens of St. Louis, the warm reception ten-

dered us, the cordial greeting offered us on your behalf, through your executive and muncipal officers, and the medical profession of your city, shall ever live in memory. Allow me to say that when our labors shall have closed, every member of this Association will carry back to his distant home, pleasant memories of his sojourn in this metropolis, and the associations and ties of friendship now formed, will cause each of us in after days, when the twilight dews are falling around us, and the shadows of life are a little longer grown, to echo the sentiments.

> "Life, we've been long together,
> Through pleasant and cloudy weather;
> 'Tis hard to part when friends are dear,
> Perhaps 'twill cost a sigh, a tear;
> Then steal away, give little warning,
> Choose thine own time,
> Say not good-night, but in some happier clime,
> Bid me good-morning."

Col. Chancellor next introduced the President, Gen. Nicholas Senn, of Chicago, who made the following address: —

THE MISSION OF THE ASSOCIATION OF THE MILITARY SURGEONS OF THE NATIONAL GUARD OF THE UNITED STATES.

Surgeons of the National Guard, Ladies and Gentlemen: Every good citizen takes a just pride and a deep interest in the safety and prosperity of his country. His patriotism should bear a direct ratio to the degree of freedom and protection he enjoys and the richness of the natural resources within his reach. If freedom, protection and prosperity are the elements which are productive of patriotism, every citizen of the United States is, or should be, imbued with love and gratitude for his country, and ready to defend it in times of danger. It is a great privilege to be a citizen of the greatest country on the face of the earth, and to belong to the most powerful and progressive nation in the world. Our country has taken a place in the front rank among

the ruling nations. Its brief history is an unbroken record of unparalleled growth and prosperity. Its inhabitants, composed of the best elements of most every civilized nation, have made good use of the wonderful opportunities presented, and have built up cities and industries which have become a source of admiration and envy everywhere. Since the war of Independence and foundation of this, the greatest Republic, a little more than a century ago, we have become the leading nation, not through the influence of a large standing army, but by developing the unlimited resources within our legitimate reach, aided by a wise administration of the laws made by the people and for the people. During this short period of our existence as a nation, we have taken an enviable position among the powers of the world, and our beautiful flag, the star-spangled banner, is respected and admired wherever it is unfolded. The stars and stripes are everywhere recognized as a symbol of liberty and equality. The history of the war of Independence, and more recently the war of the rebellion, has proved to the outside world that the American citizen is a born soldier. Within a few months, during the late great conflict, large armies faced each other in deadly combat, and on each side a heroism was displayed never excelled before. Battles were fought such as the world never has seen before nor since. The endurance, discipline and courage of our citizen soldiers have become a matter of honorable record, and have never, and are not likely to be surpassed by any standing army. Our country came out of this great struggle greater than ever. There is now no North and no South. The "gray and the blue" celebrate their war experiences side by side, and relate their victories and defeats without sectional feeling. The star-spangled banner again floats over a harmonious and peaceful nation, and is revered and loved as dearly in the South as in the North, and should the time come when it is in danger, the whole country will rise in its defense. What a happy choice our forefathers made when they selected the eagle as the emblem of our country! Like the king of the skies that knows no rival in his sphere, our country has outstripped the old world in everything that pertains to the welfare of its people. The mingling of many nations has produced a race peculiarly well adapted for self-government.

Our little standing army, composed of less than 25,000 men scattered in small detachments over a vast territory, has been seldom called into active service, except occasionally to subdue a hostile band of Indians on the frontier. Should an emergency arise necessitating military interference either in the defense of our borders or to crush anarchism, our standing army would be too small to answer the requirements.

Fortunately, every true American citizen regards himself as a guardian of public peace, ready to defend his rights and ever ready to protect the country of his birth or adoption. The National Guard of the United States, numbering about 100,000 citizen soldiers, is a military body of far-reaching influence and great power. It is composed of the very best elements of society. It represents almost every profession, trade and business interests. It is composed of men who, under all circumstances, are loyal to their general and respective State governments. It constitutes an efficient police force, scattered over this vast country from the Atlantic to the Pacific, and from the British possessions to the Gulf of Mexico. The citizen soldiers have often been made the object of ridicule and even contempt, but they have shown their patriotism, courage and military efficiency on many critical occasions. When called upon they have never hesitated for a moment to sacrifice their personal interests, and have obeyed their orders without a murmur, and discharged their duties as soldiers in a manner that would be a credit to professionals. By their prompt response when called into active service and by their soldierly behavior and action, they have nipped many a serious riot in the bud and have saved millions of property from destruction. As a rule, the different States have made ample provision financially and otherwise to secure the service of an efficient National Guard. Should it became necessary to call out the whole force, an army of 100,000 men well equipped and well drilled could be concentrated in any part of the country ready for duty, within three to five days. The many strikes and riots which have menaced the peace and personal and public property for a number of years, have shown the necessity of an efficient National Guard. Every loyal and peace-loving citizen will consider it a privilege to contribute his share towards securing and maintaining such a

force. Money paid out of the State treasury for such a purpose is well invested. The general government should do all in its power to favor the organization, maintenance and equipment of a strong National Guard in each State. The force should be doubled in five years. The services of at least one ex-officer of the regular army should be secured by each State. This officer should devote his whole time and energies in perfecting the organization within his jurisdiction and in active service should have command of the State troops. Everything which can be made serviceable in elevating the standing and in increasing the efficiency of the National Guard will contribute largely towards bettering its medical service. There are now about 500 medical officers connected with the National Guard service. This is an important part of our citizen soldiery. I have every reason to believe that most, if not all, of these officers are good physicians, but we must all admit that few of them possess the requisite qualifications and training to satisfactorily perform the manifold duties required of a military surgeon. With commendable zeal our regimental and company officers study their books on military tactics during their leisure hours, and apply the knowledge thus gained week after week in drilling the men under their command until they become masters of the situation. The non-commissioned officers and privates receive regular instruction weekly, and once a year officers and soldiers spend a week or two in camp, review the work done during the year, make new plans for the future, and return home, well versed in the art of war. What did the medical officers do all this time? Few, if any, made a serious study of standard works on military surgery and hygiene. They attended the encampment, wrote prescriptions, or dispensed medicines to those who applied for treatment, occasionally dressed a wound or fractured limb, and only very few imparted their knowledge of the litter drill to a small detail of privates and non-commissioned officers. Most of them, even if they had a desire, had no opportunity to make themselves more proficient for camp or field service. I have often heard the complaint made that the line officers do not show proper respect for the military surgeon, and do not treat him with becoming courtesy. How could it be otherwise? The only way to command respect in military circles, as

in other positions in life, is by meritorious work, and this is appreciated everywhere. As soon as the military officer has the necessary advantages and inducements to perfect himself in his special work and makes good use of them, he will be recognized, and his position in the service will be respected by officers and privates alike. It is apparent that something must be done to raise the standing and usefulness of the medical service. I know of no way of accomplishing this object except by concerted action. The military surgeons must educate themselves. We live in an age of organization, of united effort, and concentration of work. The unparalleled advances in science, art and literature, that have characterized the last decade, are largely due to systematic united work. It is true that a great discovery or an important observation comes occasionally like a flash of lightning from a clear sky, the product of some fertile brain, but the greatest advances requiring thorough scientific investigation, have been accomplished by the concerted action of many laboring with the same object in view. The stimulus imparted by the work and success of others is the motor which impels individual effort, and comparison of the results realized becomes either a source of gratification or acts like a lash that arouses the latent force to renewed action. In our country, nearly every profession, trade and business has now its local and national associations. Less than a year ago, about fifty surgeons of the National Guard, representing fifteen States, met in the city of Chicago and organized the Association of Military Surgeons of the National Guard of the United States. All present were fully impressed with the necessity of such an Association, and manifested a keen interest in its organization. The deliberations were characterized by harmony and a feeling of fraternity prevailed throughout, and every one returned to his respective field of labor with a consciousness that the first steps had been taken towards self-education in the duties of the military surgeon, and in elevating the position of the medical staff in the estimation of the line officers.

To-day we have opened our first annual meeting in this beautiful city, and have received such a warm welcome on the part of the State, the city, the medical profession and citizens

seldom extended to a scientific body. As an Association we have not yet reached our first birthday, and yet we have attained a membership of over 200. A deep interest in the welfare and prosperity of our association has been manifested outside of our ranks, throughout the United States. The newspapers and medical journals have treated us with every mark of courtesy and have brought our good work to the attention of military officers, the public, and the medical profession. The general government has encouraged us from the very beginning, by detailing for our benefit a number of the oldest and most experienced surgeons to attend our meetings. We have eagerly availed ourselves of their wise counsel in planning the sphere of our work, and will look to them in the future for instruction in the practical details of our duties as military surgeons. I am convinced that we have as a body, the good will and moral support of the entire National Guard, and particularly of its officers. The future success of this Association is therefore assured, provided its members will do their duty towards themselves and the Association. It is my intention on this occasion to call your attention to some topics which should be earnestly discussed at this, our first annual gathering, at the same time I desire to outline some of the work which should be accomplished in the near future, by our united efforts, subjects which properly come under the title of this address: "The Mission of the Association of Military Surgeons of the National Guard of the United States."

State Associations of Military Surgeons.— Our National Association should be the center of our actions, and at its meetings a uniform plan for study, investigation and practice should be made and recommended for adoption to the different State Associations. If we do our work well, it is only a matter of a few years before nearly every National Guard surgeon will be a member of this Association. The extent of our territory is so great that we can hardly expect an attendance of more than 150 or 200 at any of the annual meetings. The absent members will read our transactions, but will become infused with the necessary stimulus for work, which can only be imparted by being present at the meetings, taking part in the proceedings and coming in personal contact with the members. The actual work must be done nearer

home, at shorter intervals, and in smaller meetings. I am strongly impressed with the necessity of the formation of an Association of Military Surgeons in each State. These associations should be organized upon a uniform plan and should be legally chartered corporations and in affiliation with the National Association. Meetings should be held at least three times a year, one of them shortly before encampment, at which the work during camp life should be thoroughly planned. Litter drill, first aid to the wounded, camp sanitation and other matters pertaining to the welfare, usefulness and happiness of the civilian soldier, should be freely and thoroughly discussed. Each one of these associations should be represented at the annual meeting of the National Association and report through one of its delegates the work done during the year, with recommendations and observations of interest to the national body. The State should not only furnish free transportation, but should also defray the actual expenses of each member attending these meetings.

Appointments by Competitive Examination.— Our constitution very wisely provides that all National Guard surgeons holding a commission, and in actual service, are eligible to membership. For reasons which it is unnecessary to mention here, school legislation has been entirely ignored. It is our intention now to unite all military surgeons of the National Guard of this country into one great body, for united effective work. We cannot legislate for the past, but we must use our combined influence to secure the best obtainable material for the medical staff in the future. In most of the States the appointment of military surgeons is virtually in the hands of the regimental commander. Personal friendship, political influence and social qualifications have often been more weighty in securing a commission than a thorough knowledge of the art and science of medicine and surgery and other qualifications necessary to make a good military surgeon. This is certainly not as it should be. A colonel is expected to know all about military tactics and discipline, but the law or usage which gives him the unlimited power to appoint his medical officers, is a great evil and should be abolished if we expect to fill vacancies as they occur in the future with the best available material. The appointments should be made as in the

regular army, by competitive examination conducted by a board of medical officers. This can readily be accomplished as soon as each State has its own Association of Military Surgeons. Let each State Association appoint a board of examiners, composed of three members, which can conduct the examination of candidates at any of the regular meetings whenever it becomes necessary to fill a vacancy. As soon as it is generally known that appointments are made on merit and not by favoritism, the reputation of the medical department of the National Guard will be greatly enhanced in the estimation of the line officers, the medical profession and the public. The standing of the medical officer in military circles and the community will be proportionate to the height of the standard fixed by the examination. When commissions are obtainable only after a thorough and satisfactory examination, they will be of some value to their holders, and it will then be some honor to be known and seen as a military surgeon. The requirements of admission into the medical service of the National Guard should be gradually made so stringent, that any one who gains entrance will be recognized as a scientific man and physician and surgeon of more than average ability. A commission obtained in this way will then be regarded as of far greater value than a diploma from any of our medical colleges. Let me express the hope that the time is not far distant when the regimental commander shall have no voice in the appointment of his surgeons, but when the door to the entrance into the medical service shall be carefully guarded by a competent medical guard, and only such candidates are permitted to pass who shall be a credit to the National Guard, and an honor to the medical profession.

Medical Corps.— In most of our States, the medical officer remains with the regiment, squadron or battery with which he first became identified. If he is connected with a regimental organization, he may expect eventually to reach the rank of a major, but if he is attached to a smaller troop, promotion is out of the question. It sometimes happens that the pleasant relations which first existed between the commanding officers and a surgeon, for some reason or other, are disturbed to the mutual detriment of both sides, rendering at the same time military life unpleasant.

It is also often the case that military surgeons are placed on duty with their organization in localities much nearer the home of another colleague than his own, making it necessary to travel unnecessary distances to supply the command with medical aid. For these, and other reasons, it would be advisable to establish a medical corps in each State to be under the supervision of the Surgeon-General or a Medical Director who could detail the medical officers for duty as location and other circumstances might dictate. By making the medical officers independent of any particular regiment or smaller detachment, many unpleasant experiences might be obviated and the medical service would be rendered more efficient, and often no inconsiderable expense to the State could be saved, at the same time the surgeons would make many additional pleasant acquaintances. I am very anxious that this subject should receive due attention, not only here, but in the different State Associations.

Uniform of National Guard Surgeons.— In consequence of the too close identification of the military officer with the organization with which he is connected, National Guard surgeons, when assembled in a body, present a unique and picturesque appearance. Infantry, cavalry and artillery uniforms are worn, thus rendering it often impossible to distinguish between a line officer and a surgeon. It is desirable that this association take some steps to adopt a uniform that shall be worn by all National Guard surgeons. As it is becoming more and more the policy of military officers to pattern as closely as possible after the regular army, it seems to me that the uniform of the surgeons of the regular army would be most appropriate, and that we recommend its adoption to the different State Associations. As military surgeons are not only doctors, but also military men, it is only proper that during the meetings of the State and National Associations the members should appear in uniform, and greet and address each other during the session not as doctors, but as military men.

Original Research.— Military surgery is at present in a transitional stage. Human ingenuity has exerted itself to the utmost during the last few years in perfecting cannon, guns and other implements of destruction. The smokeless powder and the small

caliber conical bullet surrounded by a steel mantel, have revolutionized modern warfare. Rapid firing and certainty of aim at a great distance, will make the battles of the future of short duration, but the loss of life and the number of disabled by wounds will be fearful. The bullet wounds that will come under the treatment of the military surgeon of future wars, will present an entirely different aspect and will call for different treatment than those inflicted by the old weapons. The modern bullet, by virtue of its great penetrating power, will either produce a speedily fatal wound, or the injury it produces will be more amenable to successful treatment, because it produces less contusion of the soft tissues and splintering of bone than the heavy bullet used in the past. Bruns, Bardeleben and others have made careful experimental researches concerning the effect of the new projectile, but this subject is not exhausted and there is plenty of room for original work by our members in this department of military surgery. The operative treatment of penetrating wounds of the chest and abdomen on the battle field, offers another inviting field for original investigation. The various materials devised to dress wounds on the battle field, have all their faults and merits, but none of them are perfect, and I hope it will be left for some one of you to immortalize himself and this Association, by devising a dressing that will answer every requirement on the battle field. The methods of transportation of the sick and wounded, the construction of tents and movable barracks are not closed chapters, and are only susceptible of improvement by original thought and investigation. More ingenuity has been displayed of late years in perfecting fire-arms and in the invention of machines for wholesale destruction of life, than in devising ways and means in saving the lives of those seriously injured. It is our duty as military surgeons to counteract, as far as we can, the horrors of war by devising life-saving operations and by protecting the injured against the dangers incident to traumatic infection. Antiseptic and aseptic surgery must be made more simple than they are now, in order that we may reap from them equal blessings in military as in civil practice. Enough has been said to show you that a Military Association of this kind can become an inestimable boon to mankind if some of its members will explore

unknown regions and bring to light the priceless jewels of original thought and research. I hope that at each annual meeting at least one or two papers bristling with original ideas will be presented, and I am confident that some of them will be accepted as foundation-stones, upon which will be erected the coming structure of modern military surgery.

Military Medical School.—For nearly one hundred years, our government has made ample provision for the education and practical training of the officers of the Army and Navy. The Naval Academy at Annapolis, and the Military Academy at West Point are model institutions of their kind. Hundreds of young men have left these institutions with a thorough knowledge of the science and art of warfare, and many of them have become immortal as leaders of victorious armies in the history of this country. The students of these academies have always been selected from the cream of our population. From the time they enter these institutions, they are in the service of our government. The education is not only without expense to themselves, but they receive from the beginning a small salary which enables them to enjoy many of the pleasures of life. After their graduation they enter military service with the rank and pay of second lieutenant. They are well prepared for their life work. They have passed through a thorough theoretical and practical training. They are respected and honored wherever duty compels them to go. How different with the medical officer of the United States Army; he has spent a number of years in a high school, academy or college, and three years or more in a medical college at his own expense. He is now required to pass a very rigid examination, and, if successful, is assigned to some small post, with the rank and pay of a first lieutenant. He is, as a matter of course, a good doctor, but knows nothing of military life and discipline. He is entirely ignorant of the many details of clerical work required of him, and has a most serious time before he can make out a report that will prove acceptable at headquarters in Washington. No wonder that he is made the laughing stock of his little community, until by hard work and close observation he has become initiated into military life and customs. He has paid for his education as a doctor, he must educate him-

self as a military surgeon. Is there any justice or excuse in discriminating to such an extent between a line officer and a surgeon of the regular army? Is it not about time that they should be treated alike and placed on the same level from the beginning to the end? All of the larger countries in the Old World have excellent military medical schools, where the army surgeons are trained, not only as doctors, but also as military men. It is a burning shame that no such institution exists in this, the greatest and richest country. Let us, as an Association and as individuals, do all in our power to secure proper recognition for our colleagues of the regular army. Let us use our influence with the officials at Washington and the members of Congress, and ask for the establishment of a model military medical school, in which the military surgeon of the future shall receive his education at the expense of the country for which he is to devote his life. Such a school should be located either at Chicago or St. Louis; both of these cities have excellent railroad facilities, and would furnish an abundance of clinical material. The East has the academies at West Point and Annapolis, let the West have the third National military educational institution. The cadets entering such a school should have a thorough preliminary education, and should be required to study medicine and surgery and the collateral branches for at least five years. The classes would be necessarily small, consequently each member could receive thorough hospital training for at least two years. The graduates would not only be well educated, successful doctors, but also military men well prepared by practical training to commence their life work. It is well known that many of the surgeons of the regular army, for want of a proper stimulus derived from daily application of their knowledge, gradually lose their interest in their profession, and choose some other occupation in spending a great part of their leisure time. I know of nothing that would do more towards securing their interest in the progress of medicine and surgery than a three or four months' post-graduate course every five years in such an institution. The utility of such a school would also be greatly increased if its doors were thrown open for the National Guard Surgeons who should receive instruction free of expense. I have

consulted several members of Congress in reference to the advisability of making an effort to secure the establishment of a military medical school, and I have been assured by all of them that should such a movement come through the proper channel, the request would receive favorable consideration. This important matter should be brought to the attention of the government and the representatives in Congress, and I express the hope that in less than five years we shall have a military school in this country in which the coming military officers of the army and navy will receive a medical and military education, which will prepare them fully to enter the service, and in which the surgeons of the Army and Navy and of the National Guard can receive from time to time the necessary post-graduate instruction.

International Congress of Military Surgeons.—The next year the eyes of the whole world will be turned towards this country. All nations will send visitors to the Columbian Exposition. Among them will be a fair percentage of medical men, and many military surgeons. It has occurred to me that it would be a good idea to utilize this opportunity to take now the necessary initiatory steps towards the organization of an International Congress of Military Surgeons. That such an association is desirable no one will deny, that it can be effected through our young and vigorous Association few will doubt. It is difficult to realize what great things could be accomplished for the benefit of humanity and the advancement of military surgery by an association of military surgeons representing all nations. Should you think favorably of this suggestion, I would recommend the appointment of a committee representing as many nationalities as are at our disposal, with power to invite the different nations to send delegates to our next meeting. The delegates can be made members by invitation, and towards the close of the session the Congress could be organized. The Congress should meet as often as the World's Fair and, if possible, in the same city. This would always insure a good attendance. Military surgery is a branch of the healing art which not only interests the medical profession, but it is also a subject which deeply concerns governments, military men and the people at large. The military surgeon is in the employ of the government, to which he is re-

sponsible for his behavior and actions. An International Congress of Military Surgeons would represent the most important branch of non-combatants, and would afford an opportunity to its members to form many personal acquaintances which would become a source of pleasure in times of peace, and of the greatest importance and value in case of war. I trust that this matter will receive your earnest attention during this session, and that in case the plan outlined is deemed feasible and desirable, every member of this association will do all in his power towards its realization.

Surgeons of the National Guard, permit me, in conclusion, to thank you sincerely for the honor you have conferred upon me at the first meeting, in electing me as your first presiding officer. It is an honor that I fully appreciate, and that I shall always remember with gratitude. I congratulate the association upon its rapid growth and the bright outlook for its future success. I am sure that you will all join with me in thanking Col. Chancellor, the Chairman of the Committee of Arrangements, for the work he has done since our first meeting. To his untiring industry and his earnest devotion to the task imposed upon him, is due the success of this our first annual meeting, the hearty welcome we have received and the many pleasures that await us. St. Louis has immortalized itself in the annals of our Association. The lavish hospitality we are enjoying here can never be duplicated until in the course of time we again select this city as our place of meeting, and Col. Chancellor, as Chairman of the Committee of Arrangements. The success of an Association, like that of an individual, depends on hard, honest and persevering toil. Make the cause of this Association your own, and in less than five years the Association of Military Surgeons of the National Guard of the United States will be one of the largest, most influential and useful Associations in this country, honored and respected at home and abroad.

President Senn then announced that the Convention was ready to resume the regular order of business, and called upon Col. Chancellor, Chairman Committee of Arrangements, who made the following report:—

Mr. President and Gentlemen: Through the liberality and hospitality of the citizens of St. Louis, the cordial and generous support of many active co-workers, I am able to present the following attractive programme:

To-night, at 8:30 o'clock, a grand reception and ball will be held at the Merchants' Exchange Hall, Chamber of Commerce, on Third street, between Pine and Chestnut streets. You can enter this hall on Fourth street, on Pine street or on Third street.

I have the pleasure to announce that Capt. Chas. B. Ewing, Assistant-surgeon United States Army, has in charge the entertainment of the officers of the United States Army and Navy attending this Convention, and with the assistance of his able committee, will entertain them at the University Club, Wednesday evening.

It also affords me pleasure to state that Dr. A. C. Bernays will give a reception at his residence, 3623 Laclede avenue, Wednesday evening, to which the ladies and you gentlemen are cordially invited. I am confident, gentlemen, you will have a very pleasant evening at Dr. Bernays.

On the same evening, I understand that several gentlemen of the citizens committee of arrangements will extend invitations and escort to the theater all the visitors who desire to attend.

On Thursday, we have a carriage drive to the various points of interest in and about the city, including the parks, Shaw's Garden and the Jockey Club; carriages will leave Memorial Hall at 12:30 sharp. Col. Chancellor then gave general instructions as to the badges to be worn, the method of reaching the City Hospital to witness the clinic to be conducted by Gen. Senn, also information with reference to the exhibition to be given by Maj. John R. Van Hoff, surgeon of the United States Army, commanding a detachment of U. S. Hospital Corps from Fort Riley, Kansas, to be held at the Armory Hall, on Wednesday afternoon, commencing at 2 o'clock.

Members and their families have been accorded the courtesies of the Marquette Club, S. W. Cor. Grand avenue and Pine street; Mercantile Club, Seventh and Locust streets, and the Museum of Fine Arts, Nineteenth and Lucas place. Admission can be se-

cured by appearing in uniform or wearing the badge of the Association.

The report was accepted.

President Senn: Gentlemen, I will call your attention to the fact that there are fourteen papers to be read, and our time is limited, I will therefore ask that the reading of each paper be limited to thirty minutes. I give this notice so that the gentlemen having papers to read can make the necessary changes to bring them within that limit. If there are any further committees ready to report, I would like to have them do so now.

Col. C. M. Woodward, Chairman of Committee on Badge, then read the following report:—

Mr. President, and Gentlemen of the Association of the Military Surgeons of the National Guard of the United States: It is hardly necessary to go into a detailed account of the exact origin of the badge now adopted as the "Official Badge" of this organization. It is the union of three different badges, from New Jersey, Wisconsin and Michigan. As the badge was originally adopted, one large shield above another large shield, it was thought betokened a paucity of idea. An effort was made to embody the original idea, and still obviate the necessity for having one large shield so closely above another, and still have the badge compact and elegant, without too much perverting the original plan. Consequently, the right-angled triangle was adopted, as the support of the original cross. Instead of the ribbon pin as originally adopted, the shoulder-strap was substituted. For this portion of the badge the honor is justly due to Maj. Charles F. Myers of New Jersey. For the plain U. S. on the small blue shield the monogram U. S. was substituted. Very much also of the honor for important changes is due Maj. Bradley of Wisconsin, and for his efforts in behalf of the Association, in bringing about the adoption of a badge that is inexpensive, and at the same time, we trust, may be considered beautiful, appropriate and significant, and which

it is hoped may give entire satisfaction. The triangle has ever been symbolical of unity, friendship, strength and brotherly love, and which has been introduced as a support to the cross, which of itself is the badge, with its motto, indicating that what we do, we do "all for the love of country." The shoulder-strap is introduced to indicate the rank of the wearer, when, as may often be the case, he may be engaged at the operating table on the field, working perhaps with his blouse laid aside, and in his shirt sleeves. His badge, should he by any chance be surrounded by the enemy, would designate his rank and duties, which should secure him immunity from molestation or hindrance in the performance of his duties.

Report adopted.

President Senn: I think it would be well, at this time, to take action in reference to the honorary membership of the surgeon-generals of the United States Army, Navy and the Marine Hospital service. I think it would be very appropriate to have the heads of these different departments in our Association, and if there is no objection, would like to put them on the list, and at the same time am extremely anxious that we make a few prominent European military surgeons, members of this Association, and would suggest the names of Von Bergmann, Von Coler and Von Esmarch of Germany, and the surgeon-generals of France and England.

A motion was made to the effect, that a committee of three be appointed by the President of the Association to carry out this suggestion, which was carried.

President Senn asked that every member of the United States Army and Navy present, be allowed the full privileges of this Convention as other members, besides being honorary members.

It was moved and carried.

On a motion to reconsider, which carried, the President of the Association was requested to name the miltary sur-

geons of foreign countries to be made honorary members of this Association, instead of the matter being referred to a committee of three.

LIEUT. THOMAS E. CLARK OF MINNESOTA: Mr. President, I think it would be well for a committee to be appointed to forward any resolution or action that this Association desires to lay before Congress, if it is thought necessary; for instance, a suggestion for the establishment of a Military Medical School, I think it would be proper for this matter to be presented to Congress as coming from this Association, and I move that a committee of five be appointed for that purpose by the chair.

The motion carried.

A recess was then taken until half-past two o'clock.

AFTERNOON SESSION — FIRST DAY.

After recess President Senn called the Convention to order and announced the members of the committee on Legislative Affairs as follows: Col. C. M. Woodward, Mich.; Col. Herbert L. Burrell, Mass.; Col. Louis W. Read, Penn.; Gen. Scott Helm, Ariz.; and Lieut. Clark, Minn.

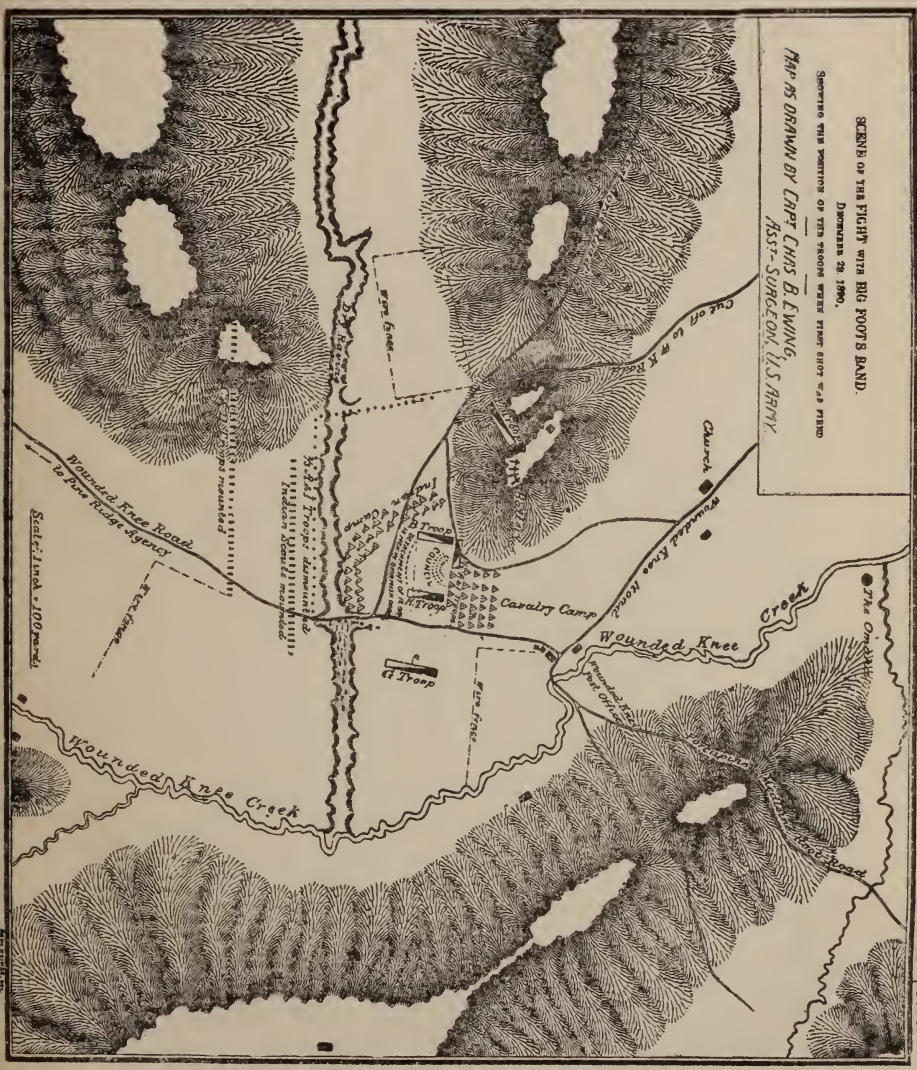
President Senn announced that owing to Gen. Joseph D. Bryant and Maj. John B. Edwards, who were to have read the first two papers, being absent, Capt. Chas. B. Ewing, Assistant Surgeon U. S. A., would read a paper on "The Wounded of the Wounded Knee Battle Field," with remarks on wounds produced by bullets of large and small caliber, with map illustrating the position of the troops and Indians at the time, which was as follows: —

THE WOUNDED OF THE WOUNDED KNEE BATTLE FIELD, WITH REMARKS ON WOUNDS PRODUCED BY LARGE AND SMALL CALIBER BULLETS.

BY CHARLES B. EWING,
Captain and Assistant Surgeon, U. S. A.

The great Sioux Indian war of 1890 has been fought so often, that I feel an apology is necessary for inflicting it upon you on this occasion, but, while much has been said of the combatants, little has been written of the casualties of which this paper will treat.

The theater of war was located in South Dakota and especially that part known as the Pine Ridge Indian (Ogallala Sioux) Reservation, situated in the southern part of the State mentioned. I cannot do better than to quote from the annual report of that very gallant and able soldier, Major-General Nelson A. Miles, regarding his disposition of troops. He says: "Seven companies of the Seventh Infantry, under Colonel Merriam, were placed along the Cheyenne river, to restrain the Indians of that reservation and intercept those from Standing Rock. In the meantime, a force had been gathered at the Rosebud and Pine Ridge Agencies. Those at the Rosebud, under the command of Lieutenant-Colonel Poland, were composed of two troops of the Ninth Cavalry and battalions of the Eighth and Twenty-First Infantry; Colonel Shafter, with seven companies of the First Infantry, controlled the country to the south and west of the Rosebud Agency, with station at Fort Niobrara; those at Pine Ridge Agency, under the immediate command of Gen. Brooke, were eight troops of the Seventh Cavalry under Col. Forsyth, a battalion of the Ninth Cavalry under Major Henry, a battery of the First Artillery, under Captain Capron, a company of the Eighth Infantry and eight companies of the Second Infantry, under Colonel Wheaton. West from Pine Ridge Agency, was stationed a garrison of two companies, under Colonel Tilford, of the Ninth Cavalry; north of that with headquarters at Oelrichs, was stationed Lieut.-Col. Sanford, of the Ninth Cavalry, with three troops, one of each from the First, Second and Ninth Cavalry; north of that, on the


SIOUX CAMPAIGN, WINTER 1890—91.
SCENE OF THE FIGHT WITH BIG FOOT'S BAND.
DECEMBER 29, 1890.
SHOWING THE POSITION OF THE TROOPS WHEN FIRST BRIGT WAS FIRED
MAP IS DRAWN BY CAPT. CHAS. B. EWING,
ASST-SURGEON, U.S. ARMY.
MAJ GEN NELSON A. MILES, U.S.A. COMMANDING
Wounded Knee Road
to Pine Ridge Agency
Scale: Inch = 100 yards
Wounded Knee Creek
Wounded Knee
Cavalry Camp
Wounded Knee Road
Church
Fire Trench
Fire Trench
Fire Trench

line of the railroad at Buffalo Gap, Capt. Wells, with two troops of the Eighth and one of the Fifth Cavalry, was stationed; north of that, on the same railroad at Rapid City, Col. Carr, of the Sixth Cavalry, with six troops, was in command; along the south fork of the Cheyenne river, Lieut.-Col. Offley and seven companies of the Seventeenth Infantry, and to the east of the latter command, Lieut.-Col. Sumner, with three troops of the Eighth Cavalry, two companies of the Third Infantry, and Lieut. Robinson's company of scouts. Small garrisons were also stationed at Forts Meade, Bennett and Sully. Most of the force was placed in position between the large hostile camp, in the Bad Lands, which had gathered under Short Bull and Kicking Bear, and the scattered settlers endangered by their presence. As the line under Col. Carr was considered the most liable to be brought in contact with the hostile force, the division commander established his temporary headquarters at Rapid City, South Dakota, where this force was in close communication and from which their movements could be directed with the least delay."

Everything indicated a peaceful settlement of affairs, when the well laid plans of Major-General Miles, looking to an early and amicable adjustment of trouble, were suddenly "frustrated" by the lamentable occurrence at Wounded Knee Creek, on the morning of Dec. 29th. The opposing forces were the following: The United States troops were eight troops, Seventh Cavalry, Light Battery "E," First Artillery and Company "A;" Indian scouts, making a total of four hundred and seventy fighting men, under the command of Col. Forsyth, Seventh U. S. Cavalry. The Indian war party consisted of 106 warriors and two hundred and ninety-four women and children, all of the Minneconjous Sioux, under Chief Big Foot.

So many descriptions of this unfortunate affair have been published, that I shall limit myself simply to so much of an account as is to be found in the very brief and concise language of my report, made upon request, to the department commander, and in so doing I ask pardon for using the personal pronoun, to the extent that I do, but, inasmuch as a report of my *personal* services was desired, I was obliged to frame it in the following terms:

OFFICE OF ATTENDING SURGEON,
ST. LOUIS, MO., June 23, 1891.

To the Adjutant-General, Division of the Missouri, Chicago, Ill.

SIR: Understanding that a report of my services at the battle of Wounded Knee is desired, I have the honor to submit the following:

The battle began at 9:30 a. m. Dec. 29th, 1890, and the troops withdrew from the field about 2 p. m. and marched to Pine Ridge Agency, reaching that point some time between 9:30 and 10 o'clock that evening.

Lieut. Kinsie, 2d U. S., Infantry; Mr. James Asay, Indian trader at Pine Ridge Agency, and myself, were seated in an open wagon, within ten or fifteen feet of one end of the parallelogram of soldiers that surrounded the Minnecoujous Sioux band under Big Foot.

Col. Forsyth, 7th U. S. Cavalry, was writing a communication which one of our party was to carry to General Brooke, commanding department of the Platte then at Pine Ridge Agency, and while waiting for communication, the firing commenced. A volley came in our direction, the bullets whistling unpleasantly about us; our horses took fright and becoming uncontrollable ran right across the line of fire, but were turned and finally stopped near Louis Mossoeu's store, about three hundred yards distant from the field of battle; we alighted and I was then informed by Lieut. Kinsie, that he had been shot in the foot; after examination of the same, I immediately returned to the camp and busied myself in the care of the wounded.

I did not think it a time for ceremony, hence dispensed with the formality of reporting for duty and at once went to work. The work consisted principally of what is known as first aid to the wounded. The only exception being an operation of a plastic nature, when I replaced and stitched the severed nose of Mr. Wells, the interpreter, belonging to Lieut. Taylor's command of Indian scouts. This was the only operation, if my memory serves me, that was performed on the field.

This first aid consisted in stopping hemorrhage, applying dressings to wounds, putting up fractures, giving stimulants, and

allaying pain. Later on it became necessary to redress many of the wounds, as is often the case, the first dressing being only temporary.

I accompanied Captain Edgerly's troop to a point about three miles to the west, where Capt. Jackson was reported to be surrounded by hostile Brules. Truth forbids that I place this in the light of a medical service, and I fully confess, that it was only after arriving at our destination, that I was aware that I lacked everything in the way of dressings, to tender aid to the wounded in case of trouble; of course much could have been done in that regard, by using the clothing and equipment of the men. My only excuse is that I went very suddenly so quickly in fact, that there was no time for obtaining dressings. It was in this way. I was standing on the brow of the hill, watching the firing of the Hotchkiss guns and the barricading of the Ridge, when Capt. Edgerly's troop galloped past and seeing a horse in the troop without rider, I ran out and jumped in the saddle. I had provided myself with carbine and ammunition. hence was in good shape. It did not take us more than fifteen minutes to ride the three (3) miles and we were just in time to see the Indians disappear in the direction of Pine Ridge Agency. After remaining about fifteen or twenty minutes I suddenly remembered, that I had absolutely nothing in the way of dressings, hence returned to camp with Lieut. Brewer, for the purpose of obtaining some, but learning that the command was to return immediately, I found my services would not be needed, hence did not obtain dressings as I intended doing.

Now to sum up: I was on the field from 9:30 a. m. to about 4 p. m., at which hour we began our march back to the agency. Of that six and one-half hours, I am quite sure I spent two and one-half to three hours at the dressing station and the same length of time superintending the removal of a part of the wounded and at least three-fourths of the dead, to which must be added about three quarters of an hour taken up in accompanying Capt. Edgerly's command and returning as stated above.

We consumed about five and one-half hours on the march to the agency, which was of necessity slow. I rode a horse (kindly furnished me by a troop commander) as did also Assistant Surgeons Hoff

and Glennan. I did not render any medical service on the march and think it quite unlikely that such could have been rendered efficiently as darkness came on quickly and lights were not permitted in the command. I was not called upon to render any aid by the surgeon officially in charge and I fail to see under the conditions how the wounded could have been benefited further till arrival at division hospital. I would be failing in a proper appreciation of the work of my brother surgeons, in this connection, were I not to mention the very efficient and untiring services of Capt. Hoff and Lieut. Glennan, of the medical department, who labored unceasingly in ministering to the wounded, Upon arriving at Pine Ridge Agency, the wounded were placed in that part of the Divisional Field Hospital of which I was in charge. It was my duty to attend and redress twenty of the wounded, which occupied my time till 2 o'clock the following morning.

Very respectfully, your obedient servant,

Charles B. Ewing,
Capt. and Assistant Surgeon, U. S. A.

Now to the consideration of the casualties, which I shall separate into the killed and the wounded: of the former, we had one officer and twenty-nine men, a total of thirty.

The great majority were killed outright, the very few surviving a variable time from a few minutes to a few hours after the reception of their injuries. Capt. Wallace, beside the fatal gunshot wound of the lower abdomen, received two cuts with a tomahawk or hatchet; One across the forehead, just above the superciliary ridges and the other conforming to the anterior 2-3 of the sagittal suture. In neither case did these cuts fracture the skull.

This officer's death coming as it did in the heyday of his career was indeed a "tragedy" No words of mine can portray the love and admiration in which he was held by his family, friends and brothers in arms.

"His life was gentle; and the elements
So mixed in him, that Nature might stand up
And say to all the world, 'This was a man.'"

The greater portion of the dead had received two or more wounds. In order that you may clearly appreciate the treatment of the cases to be presented, I shall premise by stating, that my knowledge of them dates from the battle field, on the morning of Dec. 29th, 1890, and ended, so far as three-fourths of them are concerned, upon their transfer to Fort Riley, Kansas, Jan. 4th, 1891; remaining in charge of those whose condition would not permit of transfer at that time till a day or two later, on which date I was placed in command of company of Hospital Corps.

The wounded consisted of two officers, twenty-nine enlisted men, and one civilian interpreter, attached to the scouts. I shall classify the above, broadly speaking, according to the part of the body injured, leaving out of detailed consideration 12 cases of gunshot wounds, mostly of minor import, which did not come under my care.

In brief then, we have Gunshot Wounds of the Head, Body, Upper and Lower Extremities.

We will now consider the wounds as classified, taking up those of the Head, three in number:—

Case 1st. Private H. D., Troop "A," 7th Cavalry. Pistol ball entered right side of the face 1-2 inch anterior to lower part of right meatus auditorius externus, passing transversely through bones of face and obtaining exit 2 1-2 inches anterior to lower part of lobule of left ear. Caliber of pistol not known, but from size of wound of entrance, think it about a 38. Discharge of blood from both ears and persistent flow of saliva, the latter giving evidence of the wounding of Steno's duct. A violent cellulitis supervened, which finally subsided under treatment, and he was in excellent shape when transferred.

Case 2d. Gunshot Wound of Inf. Maxilla, Qm. Sgt. C. C., 7th Cav. Ball entered near left inf. angle of chin passing transversely through body of inf. maxilla, with inclination downward, gaining exit at right inferior angle of chin, crushing and comminuting the bone in its passage. Treatment consisted of removing broken particles of bone, with corresponding teeth, stitching the lacerated integument of chin; applying antiseptic dressings, felt splints and bandages, to support chin. This man was doing as

well as he could under the circumstances, when transferred. I understand that he has since had false teeth and plate made.

Case 3d. Incised Wound of Nose. Mr. W., Indian interpreter, attached to Co. "E" Indian scouts, had all that part of nose anterior to nasal bones, slashed off with a knife in the hands of an infuriated Indian of Big Foot's band. The severed part was hanging by a mere shred and bleeding profusely. Fifteen minutes after reception of wound, I replaced nose and held same in place with numerous silk stitches. This man immediately after the operation, took his Winchester and went at once to the skirmish line and afterwards on our return to Pine Ridge Agency, took his place in the advance with Lt. Taylor's scouts. I did not see Mr. W. for some days after the operation, when I found good union and removed stitches. This, if it can be so dignified, was the only operation performed on the field.

I now come to the Gunshot Wounds of the Body.

Under this heading we have five cases: —

Case 1st. Penetrating Gunshot Wound of Chest. Private J. C., trumpeter "K" Troop, 7th Cav. Ball entered two and one-half inches below and one inch from left nipple toward mesian line, passed transversely in straight line, gaining exit two and one-half inches below right nipple. No rise in temperature and patient in good condition when transferred.

Case 2d. Sgt. "A" H. H. Troop "A," 7th Cav. Ball entered posterior surface of left chest passed forward coming out just internal to the left nipple. Besides the above, Sgt. H. suffered two additional gunshot wounds, one above and the other below the elbow. Pneumonitis supervened.

Case 3d. Sgt. L., Troop "I," 7th Cav. Ball entered to right of sternum just below clavicle, passed backwards and outwards, obtaining exit at axillary line in the fifth intercostal space, where incision was made and ball removed with pieces of blouse and fragments of under-shirt. Pneumonitis followed.

In considering the treatment of the cases coming under this particular heading of penetrating gunshot wounds of the chest, I should like to mention the cases of one officer and two enlisted men, who suffered gunshot wounds of like character in an affair

with Chiricahua Apaches at Chevelon's Forks, Arizona, July 17th, 1882.

The treatment of all these cases was alike, with recoveries in all of them. It was as follows: —

Thorough cleansing of wounds; application of corrosive sublimate solutions; iodoform powder dusted upon parts; antiseptic dressings just sufficient to cover each particular wound, then the application of collodion sealing part "hermetically," or by what is known as primary occlusion; finally restraining the muscles of respiration by circular bandages of chest and fixing arm of side affected. I do not wish to place myself on record as treating all penetrating gunshot injuries in this way, but simply present my experience to your consideration for what it is worth. I am quite of the opinion that I should modify my treatment by substituting the plaster of Paris bandage, with the flannel roller, for the circular cotton bandages, to restrain the muscles of respiration. This treatment by primary occlusion may seem very radical indeed, when such an authority as Ashhurst says, "The vast majority of penetrating wounds of the chest are gunshot injuries, the exceptions incised or punctured wounds. Applying the ordinary principles of surgery, even to the exceptional group, nothing but absolute necessity would justify the complete closure of the wound."

And again, "Surely the conditions of a wounded lung and thorax are unfitted for the experiment of closure," and further "Nothing appears more repugnant to the principles of surgery than the attempt to close a bullet track which, however it be placed, under its ordinary conditions must afford ample material to be discharged externally." I quote the above to present the other side of the question as well as my own. I think this kind of dressing for chest wounds would become very necessary, particularly where traumatic pneumonitis has been set up, which would preclude the constant change of dressings and the consequent exposure of the chest at those times. The consensus of opinion among military writers is that the least fatal injuries are those in which the projectile has passed entirely through the chest, being less injurious than those in which the bullet has

lodged. While my cases are few the results are certainly very satisfactory, when we consider that during the last two years of war, the deaths from penetrating wounds of the chest reached almost 33 1-3 per cent. Since writing this I have learned that one of the cases mentioned died of pneumonia, but whether of traumatic origin I can not say.

Case 4. Gunshot Wound of Vertebræ, Upper and Lower Extremity. Private ——, "B" Troop, Seventh Cavalry, suffered four distinct gunshot wounds, one passing transversely through vertebrae from left to right, crushing and comminuting vertebrae and severely injuring the cord and its membranes, and finally lodging in the muscles of the right lumbar region; two, penetratrating gunshot wounds of right and left arms near elbow joints, and the fourth passing through left leg just above ankle joint. It would not be economizing fact very much to say that this man was literally shot to pieces. The bullet, which I now exhibit, weighing 385 grains, was removed from the right lumbar region by simple incision, without anæsthetic, immediately after his arrival in the divisional field hospital at Pine Ridge, and as nature had not moulded him to resist three ounces of lead in this form and method of distribution, he died shortly afterwards. The injuries of this soldier were so severe, that it was hardly expected that he would survive the journey from the battle field to the field hospital, sixteen miles distant.

Case 5th. Gunshot Wound in Neighborhood of Right Inguinal Region. Lt. H. H., Light Battery Second Artillery, received gunshot wound (Winchester) of right side, ball entering just external to anterior, superior spine of right ilium and passed downwards and inwards. This officer was in charge of a Hotchkiss gun some 400 yards distant from a party of hostiles that had gained the shelter of a ravine and who were beset upon two sides by the fire of carbines and upon the third by Hotchkiss guns. The gun in charge of this officer was removed from its original position upon an eminence to lower ground, so that better range could be obtained, rendering the fire more effective; this was so successful that the Indians sought to silence this particular piece, resulting in the shooting of Lt. H. The ball was deflected from its original course, seemingly a fatal one, by a watch worn at the

time and which was completely destroyed. I saw Lt. H. when shot on the field; he fell under my care that evening at the field hospital and the same night or the following morning I examined and dressed his wounds, at which time the course of ball had not been fully determined. Having a great deal of work on my hands I was glad when relieved of this case by another medical officer. I understand that Lt. H. has so far recovered from his injury as to be able to perform duty.

Let us now consider gunshot wounds of the Upper Extremity.

Sgt. H. H., Troop "I" 7th Cav., was admitted to the Field Hospital, Pine Ridge Agency, Dec. 29th, from the field where I first saw him. Ball entered just external to coracoid process of scapula, passed through deltoid muscle, finally entering the head of humerous. Severe. This man was treated upon the expectant principle, till his transfer to Fort Riley on Jan. 6th, for the following reasons: no appreciable rise of temperature; complained very little of pain; was able to sit up and walk about to a certain extent. Treatment consisted of securing thorough drainage of wound; absolute rest by appropriate position and posterior splints of felt or plaster of Paris, I have forgotten which; antiphogistic regimen; hypodermic administration of morphia when necessary. I find myself well supported in the above method of treatment by Billroth, who declares against operative procedures, under like conditions, as follows: "As in cases of resections, you can have no control as regards the prospective functions of the arm, especially when a large portion of the bone is to be excised, it is always better for the patient to escape with an anchylosed joint, without resection, than to have a dangling joint after resection." Von Langenbeck says, "If it be true that anchylosis of the shoulder joint enhances the usefulness of the rest of the extremity, and especially of the hand, we would be obliged in shot injuries of the shoulder joint, to constantly strive for the accomplishment of anchylosis. The presumption that anchylosis would bring about greater usefulness of the arm than could be had with the shoulder joint, even with limited motion, rests upon a fallacy, occasioned by neglect to take into consideration the various degrees of severity of shot wounds of the shoulder joint."

The same author cites nine successful cases of shot wounds of the shoulder joint treated on the expectant plan, the patient in every case recovering "completely with conservation of good motion of the arm." He further says: "It is certain that the results of the cases of conservative treatment of shot wounds of the shoulder joint above cited challenge greater attention to the side of conservative surgery."

Two of the cases under this heading were gunshot injuries in the *neighborhood* of the shoulder joint, one of them made by a Winchester, 38, and the other by a gun of larger caliber.

Both cases were given complete rest by means of splints and position; drainage of wounds obtained; antiphlogistic regimen and opium in case of pain, which complaint was rare.

No symptoms up to the time of transfer to warrant operative interference. I am quite of the opinion, however, that if the temperature, pain, etc., had so indicated, I should at once have made an exploratory incision, and an exsection or amputation, according to the conditions in each particular case, but up to the time of transfer to Fort Riley, there occurred nothing to warrant such procedure.

Gunshot Wound of Upper Extremity. Lt. G., 7th U. S. Cav., received a shot which entered olecranon process of right ulna, comminuting that part, passing forward through shaft and gained exit at the posterior service of the arm, at junction of inferior, with middle third.

Treatment consisted of removing portions of bone; applying antiseptic dressings and supporting arm. This case was turned over to another surgeon the day following, at the field hospital. I have since learned that this officer has rejoined his regiment.

Gunshot Wound of the Right Hand. Private F. L., "B" Troop, 7th Cav. Ball entered internal border of wrist and passing through comminuted bones of same, coming out on palmar service at base of thumb. Wounds cleansed, dressed antiseptically and given rest by application of splints.

This man was transferred in good condition.

Gunshot Wounds of Lower Extremity consisting of Two of Thigh, One of Knee and Two of Leg: —

Case 1. Private Wm. H. G., "C" Troop, 7th Cav., while mounted received a gunhsot which entered middle of posterior service of left thigh, at junction of middle with upper third, ranging slightly downward (missed femur) passed forward and inward obtaining exit at about middle of internal service. Wounds were cleansed, dressed antiseptically and when transferred patient was about well.

Case 2. Private E. S., Troop "C," 7th Cav. Gunshot Wound of Right and Left Thighs. Ball entered inferior service of left thigh, ranged upward in front of femur, passing out at internal border of anterior service at junction of middle with upper third; this ball continuing its course entered internal border of posterior surface of right thigh and ranging transversely behind femur, passed out at middle of upper third of external border of posterior service. Treatment consisted of thoroughly cleansing wounds, using bichloriode of mercury solutions and dressing antiseptically. This man had about recovered when transferred.

Case 4. G. E., Private, Troop "K," 7th Cav. Gunshot of Right Leg, Middle Third.

This was a very severe compound comminuted fracture of both tibia and fibula, with much destruction of the soft parts, including a division of both anterior tibial and peroneal arteries. Am of the opinion that this was a case of primary infection. Thirty-six hours after entrance into field hospital it was decided to amputate limb. I performed the operation assisted by surgeons Hartsuff and Spencer, U. S. Army, under rather unfavorable auspices. A Sibley tent with the earth for a floor, served as an operating room, which is very unsatisfactory, inasmuch as your light passes to you through a mere "chink" of a door and the tripod which supports the central upright pole of tent permits very little room for the operating table, assistants, and tables for antiseptic fluids. Then, again, you may sprinkle your floor assiduously with water, yet those moving about run great risk of stirring up clouds of dust. Patient was placed under chloroform and a lateral flap amputation was performed, four inches below knee joint, under antiseptic conditions, so far as they could be obtained. Leg was found as described above; flaps were brought together, permitting of the freest drainage. Treatment

then consisted in supporting patient and using persistent antiseptic irrigation of the stump, but despite all our efforts, the products of the staphylococcus pyogenes were formed abundantly and the patient succumbed to pyæmia resulting from a primary infection upon the battle field. Now to sum up, we have reviewed: gun shots wounds of the head, three cases; of the body, eight, including the three cases quoted; of the upper extremity, six, and of the lower, four, making a total of twenty-one cases.

The difficulties of the situation, as they appeared to the medical director, Col. Bache, can best be learned by a reference to his own language when he says, "Had that regiment (the 7th) been operating at a distance from support or organized assistance, instead of having a receiving hospital within easy reach, it is not hard to cast the sum of its suffering." In comparison with the difficulties met with in this instance, in which there were three (although the Medical Director says two) medical officers and four hundred and ten men to care for thirty-one wounded, I would like to place for a moment those met with and successfully overcome in an affair in which I played a part some years since upon another field.

My memory recalls the battle of Chevelon's Forks, Arizona, the 17th of July, 1882, where the fighting strength of the Chiricahua Apaches was about the same as that of the *actual* Indian combatants in this affair under consideration; the opposing force being two troops of the third and one of the sixth cavalry, under Major Evans and that brilliant cavalryman, Capt. Chaffee, respectively. These Indians were the most warlike in the entire southern country, and among them were the renegade scouts that had turned against Gen. Carr's command at Cibicu Creek, Arizona, the year before. The engagement was a sanguinary one, the Indian foe holding a very inaccessible point in the mountains, some five or six hundred feet high, with precipitous sides except upon the south, which, while permitting the approach of our forces, was so strongly fortified, and the Indians so well armed, and such good marksmen, that this line of approach was exceedingly dangerous. The casualties were two officers and twelve men wounded and two men killed. The Indian loss was fifteen killed, left upon the field, and a number of wounded carried off under cover of

darkness. The Indian camp was captured and with it two Indian squaws and two children; one of these squaws suffered a very severe gunshot wound of the right leg, which made amputation necessary. I performed this operation at once upon the field, using as an operating table, a box placed upon the ground, which at that time was covered with three or four inches of hail, having plenty of spectators in the shape of soldiers. This case, with seven others, we carried by hand on rude litters, fashioned from the branches of the pine tree, for a distance of fifteen miles, such was the roughness of the country. Upon gaining the tableland of the Mogollon mountains, where a comparatively smooth country was found, mule litters were made upon which the more serious cases were placed, and carried ninety miles to Whipple barracks. The lamented Crawford was detailed with two troops of cavalry to help me out of the mountains with the wounded, and his men acted as litter bearers, *relays being necessary every two or three hundred yards.* This task, from the ruggedness of the country and the rudeness of the litters, was found not a very agreeable one. Our base of supply in this instance was *fifty miles* distant, whereas, in the affair under consideration, it was only *sixteen.*

The difficulties were really not great and I can only recall one case, in which I thought the amputation of the limb should have taken place on the battle field rather than at the field hospital, 24 to 48 hours later.

This unfortunate battle provoked another hostility upon the following day in the shape of the White Clay Creek affair. Such, however, was the masterly manner in which that gallant soldier, Gen. Miles, *controlled the situation both by his comprehensive knowledge of the art of war as indicated by the disposition of troops and his clear insight into the Indian character, that he prevented what at one time threatened to become a serious Indian war.* Peace as well as safety was again assured the settlers of that sparsely populated country a month after the arrest of Sitting Bull, by the surrendering of nearly 4,000 Sioux Indians at Pine Ridge Agency, Feb. 15, 1891. The entire sentiment of the country is well voiced by no less a personage than the president of United States, in his last Annual Message, when in speaking of Gen. Miles, he says, "*He is entitled to the credit of giving*

thorough protection to the settlers and of bringing the hostiles into subjection with the least possible loss of life.''

It is not surprising that the casualties of the foe, as well as of ourselves, were great, when we remember that the firearms were those of largest caliber at close range. The Sioux were armed with three different kinds of guns; viz., Winchester of pattern of '66 and caliber about 45; Winchester, caliber .38 and the Springfield carbine, caliber .45. The principal weapon was the Winchester, caliber .38, together with a very few of the other patterns mentioned.

The U. S. troops were armed with Springfield carbine, caliber .45, weight of bullet 405 grains, composed of lead and projected by 55 grains of powder.

The wounds resulting from the above were sinous and irregular, with lacerated edges, and the apertures of exit were frequently much larger than those of entrance. Fragments of clothing splinters and pieces of lead were at times left in the wounds by the bullets, which when permitted to remain frequently led to long and obstinate suppurations (as instanced in the Indian wounded), often rendering secondary operations necessary.

These bullets by reason of the malleability of the metal, (lead,) of which they are made, are expansive; they easily lose their regular form and "mushroom," readily bursting into fragments upon contact with a hard body. By reason of the above, wounds of blood vessels are more frequent and attended with laceration and the gravest of all dangers to the wounded on the battle field, hemorrhage. These wounds are further complicated by the splintering and not infrequently the complete shattering of bones.

I am of the opinion that three-fourths of the casualties of the opposing forces were received in what may be termed the "*Explosive zone*" of the projectiles' trajectories.

If then for the sake of illustration, we divide the trajectory of a small arms projectile into three zones of action indicative of the effects of its penetrating power on the human body, we should designate them as: *Firstly, A zone of explosion: 2nd, a zone of penetration; 3d, a zone of contusion.*

The discussion of the zones of "*explosion*," of "*penetration*,"

and of "*contusion*," is a mixed one involving both mechanics and physiology. Its mechanical features are essentially as follows: A very rapidly moving projectile practically *shatters* and *destroys* the material opposed to it, and makes a *clean* hole, as a pistol bullet through a pane of glass or as the *entering* bullet in the familiar type of gunshot wounds. A projectile of *less* velocity *tears* or *breaks* the material opposed to it, as a bullet thrown from the hand against a pane of glass, or as the *issuing* bullet in the ordinary gunshot wound.

The "*zone of explosion*" for any given piece, is that part of its range in which the projectile has so great a velocity, that its loss of speed by penetrating the body of a man, still leaves such velocity as to make the wound of exit similar in character to that of entrance, the loss of velocity by the work of penetration is so great that this zone is very narrow, except for pieces of great power.

The "*zone of penetration*" for any piece is that part of its range in which the velocity of its projectile is such that it perforates the human body, but the loss of velocity in doing so leaves the projectile unable to make the wound of exit similar to that of entrance. This zone makes up the important effective range of most fire-arms.

The "*zone of contusion*" covers the whole range from the last to the harmless "spent ball." Much of it is still effective range.

The penetrating power of the projectile varies directly with its *weight*, directly with the *square of its velocity*. The *resistance* of the human body may probably be taken to be *proportionate to the area struck*, that is to the *square of the caliber*.

With record of the remaining velocity of the projectile at succesive stages of its trajectory, which it is perfectly possible to have with fair accuracy and with an assumed value of the work of penetrating the average human body; which assumption could be made within reasonable limits of error, and with an assumed value of the remaining velocity after penetration re-appearing to leave a wound of the "*explosive*" type, which would be a very vague assumption, accurate calculations of these zones could be made, but the results could be no better than the assumed data of

the problem. Looking to experience, for the zones of the Springfield rifle, the wounds at the Wounded Knee fight, mostly within 100 yards range, were distinctly of the "explosive" type. The wound of Lt. Hawthorne, delivered at 300 to 400 yards, just failed of this type. I have seen, at target practice at known range, the body of a man perforated by the Springfield bullet at 1,000 yards, and my memory retains no note of the wound of exit, being of remarkable character, from which I infer that this range is well within the zone of penetration. I shall therefore estimate these zones, for effective range of 2,400 yds., to be as follows: *Explosion* 250 yds; *penetration* thence to 1,200 yds.; *Contusion* thereafter. In comparing the more modern arms with the Springfield rifle, the higher velocity and the less area of resistance more than counterbalances the less weight of projectile, and the "*zone of explosion*" confined to very short range in our arm, is with them a considerable part of their effective range.

We are neither keeping pace with the humanity of nations nor increasing the effectiveness of our army, by still holding on to the antique single-loading Springfield rifle, caliber .45.

This old-fashioned gun cannot be compared to that of France, the weapon of Germany or that of Austria, and while our arm possesses a larger caliber than that, I think, of any other civilized nation at this time, it cannot be classed with such old calibers as those of '68 and '72 (the latter known as the Minnie carbine) carrying projectiles that weighed as much as 740 grains. We find, however, a gradual change for the better, as in the last Franco-Prussian war, the Germans were using an arm with projectile weighing 478 grs., twenty-two grs. less than our own. The French, upon the other hand, were armed with the Chassepot, caliber .43 carrying a bullet weighing 385 grs. The Gras which superseded the Chassepot in 1874 did not reduce the caliber or weight of bullet. The real advance was made, however, in the direction of increased velocity and reduced caliber, when the Lebel was adopted. Germany kept pace with France in substituting the Mauser model, 1888, for that of 1871–84 and Austria followed suit by arming her troops with the Mannlicher.

Now to sum up, from the stand-point of the ballistics, the modern arms mentioned are superior to ours by reason of pos-

sessing, 1st, *greater initial velocity;* 2d, *flatter trajectory;* 3d, *greater accuracy;* 4th, *greater penetration;* 5th, *greater range.*

Added to these qualities, we find the quantity of powder lessened, the weight of projectile decreased, and from a financial view less cost of the arm as a whole. The most interesting fact is presented, however, when we consider this matter from a surgical aspect. Chavasse and Delorme are of the opinion that all wounds received in a space between 300 and 900 yards are equally dangerous but this is not concurred in by the Chauvel, who contends that the explosive effects are not as frequent in arms of small caliber. Dr. Noel in the *Medical Bulletin* of February and March of 1891 says, "The disorganization of the soft parts is so extensive and the loss of tissue so considerable, that in general all reparation is impossible and a considerable sacrifice is rendered unavoidable." The "*zone of penetration*," however, presents a more marked difference; here the bullet as a rule maintains its shape, the wounds of entrance and exit are equal, the fluids of the body are not thrown violently toward the periphery, as in the case of balls of large caliber and the edges of the wound are not bruised or lacerated, but look as if the integument had been "punched out." As we have stated, the bullet does not change its form, except in very rare cases, so that fragments of clothing and foreign bodies are not usually left in the tract of the wound, hence, consequent suppuration is not to be feared. It is said that union is, as a rule, to be expected by first intention, the period of recovery will be shortened; paralysis or extensive shock rare; gangrene less grave and infrequent. Bones will not suffer fracture to the extent heretofore known, as they will be pierced in their entirety, and the fissuring and splintering will not be so extensive. Blood vessels and nerves will run less risk of being struck proportionate to the reduced diameter of the projectile, consequently hemorrhage will not be so frequent and the wounded in better position to await first aid. In the "*zone of contusion*" we will find either simple contusions or contused wounds, their gravity diminishing as the bullet reaches the end of its trajectory, thereby losing its force. Periosititis, abscesses and exfoliations will ensue at times where bones have been struck, but these form the

most serious cases, for generally we will find mere extravasations of blood into the connective tissue. The optimistic picture just drawn portrays what is thought by some of the French and German writers upon the subject of their respective arms, but this is not shared in by Billroth, who recently spoke to a question relating to the re-organization of the army medical corps of the Austrian army. He is of the opinion that the modern small arm will aggravate suffering and slaughter in the battle of the future, and informs us that as 80 per cent. of all wounds result from rifle balls, 15 per cent. from heavy guns, and 5 per cent. from cavalry weapons, surgical attention must be devoted principally to the infantry projectile. Accurate statistics of the war of 1870–71 show that comparatively few were killed by artillery.

Speaking of the manœuvering at a distance which the long range of the modern arms will lead to, he says, "A collision must come some time and then what will the effect of the new rifle be? Bullets that formerly stopped at the bone will pierce it, and perhaps two or three other bones, the number of severely wounded will be rapidly increased, and the armies will dwindle rapidly."

In consequence of the greater length of range, the wounded must be treated at a longer distance from the enemy, say 400 paces further than heretofore. Moreover, with the quicker movement of the troops, comes the necessity for the quicker moving of the field hospitals. The number of porters for the wounded, already too small in the Austrian army, will have to be largely increased; in fact many wagons must be drawn up immediately behind the line of battle to carry off the injured."

After dwelling upon the increase of the mortality to result from the use of smokeless powder, Prof. Billroth continues to speak very disparagingly of the stretcher service in these words: "At Gravelotte St. Privat there were 5,000 dead and 15,000 wounded. Two-thirds of the latter were only slightly wounded, and were carried off by railway. For the severely wounded when we calculate that two porters with one stretcher made the trip of 500, 600 and 700 paces, ten times during the eight hours of the battle, we find that for the Germans alone 500 stretchers and 1,000 porters were necessary. We have left out of all consideration the French, for whose severely wounded the Germans,

as victors, had to care. This, at least, doubled the requirements, so that 2,000 porters and 1,000 stretchers were needed.

"This shows how entirely impossible the whole stretcher service is."

The next paper was read by Gen. Scott Helm, Surgeon-General N. G., Arizona, on the subject of primary dressing of fractures, which was as follows: —

THE PRIMARY DRESSING OF FRACTURES.

BY SCOTT HELM,

Brig.-Gen. and Surgeon-General N. G., Arizona.

It is with considerable temerity that I venture upon so trite a subject before so distinguished a body of representative American surgeons. Yet few are there who will dispute the assertion that there are no conditions coming under the attention of the surgeon, so replete with bad results, injured reputations and suits for damages, as is the case with fractures generally. Can I not call up in the minds of some of you within the sound of my voice, the vivid recollection of some rapacious attorney, backed up by a contingent fee and a client with nothing to lose and everything to gain, and perhaps one of those unfortunately terminated fractures? I heard the late distinguished teacher, Professor Moses Gunn, once say that he began to think he was not much of a surgeon after all, until he had about two such cases on his hands.

It behooves the careful surgeon, therefore, to take every precaution and exercise every possible care, that science, experience and genius have developed, to guard against these unfortunate possibilities. He must be accurate in his diagnosis, quick and apt in his manipulation, skillful and deft in his dressing, and circumspect and cautious in his prognosis and in all the safeguards he may be able to throw around himself and his patient.

In furtherance of these precautions and suggestions, the examination of the injury should be conducted in such a manner as to avoid rough manipulation and thereby do further injury to the soft parts, perhaps even making a simple fracture a compound one.

Too much stress can hardly be laid on the necessity of exercising great gentleness and patience during these examinations. Care and gentleness may be put on almost at least an equal footing with skill, in the examination and diagnosis of a fracture. As Hamilton has said, nothing betrays a lack of judgment as well as of common humanity, on the part of the surgeon, so much as a rude and reckless handling of a limb already pricked and goaded into spasms by the sharp points of a broken bone.

The modern surgeon, the man of cultivation and refinement, will instinctively bear this in mind and proceed accordingly. If he finds his patient upon the field or in the hospital, he will by his very presence, quiet his fears that he is to be unnecessarily hurt, thereby rendering the examination much more easy and free from the disturbing and harmful influence of a frightened and excited patient.

Yet it is difficult to state the precise manner in which the surgeon should proceed. Much will depend upon the circumstances of the case — something upon his natural tact and experience in such cases, but even more upon natural kindness of heart and social education. The man of refinement and sensibility will know instinctively how to proceed, and needs no further instruction. He who lacks these qualities, can never learn, and it would be quite useless to undertake to teach him. (Hamilton.)

So, also, where anæsthetics are used, the surgeon should not forget that although his patient is insensible to pain, and the soft parts are so relaxed as to be free from spasm, they are equally liable to injury by the rough edges of the fractured bone, if unduly manipulated. Anæsthetics are not often necessary, but if the diagnosis is obscure, and the examination unsatisfactory, the operator should not hesitate to render the patient unconscious, always, however, bearing closely in mind the previous question in regard to the inflicting of further injury upon the soft parts.

The question of the time when these examinations should be made, is also one of much importance. The earlier the examination is entered upon, the more readily will the character of the injury be recognized, but if, as frequently happens, some time has already elapsed since the injury was received, and much

swelling has taken place before the arrival of the surgeon, the examination should still not be omitted, and each day the diagnosis should be attempted to be verified, until the subsidence of the tumefaction.

It is desirable to reduce these fractures at as early a moment as possible after the occurrence of the accident, and also to retain the broken fragments in apposition by proper dressings. This, not infrequently, is impossible at once without producing much pain and inconvenience to the patient, and sometimes proves a source of danger to the parts involved. Therefore, temporary dressings must in almost all cases be resorted to. This is especially true where immediate transportation of the patient becomes necessary.

Much additional injury may result from the careless or ignorant handling of such accidents. If they can be properly attended to where the accident occurs, much future pain, swelling and possible complications, may be avoided. It is of great importance, therefore, that from the occurrence of the injury to the final discharge of the patient, intelligent care and adequate skill should be exercised not only to protect the patient from serious consequences, but also the surgeon from the unpleasant complications previously referred to.

It is not usually necessary to remove the clothing of the patient until arrival at the bedside. During transportation the broken limb should be so supported or sustained by temporary dressings, that the damage from moving or jarring the broken ends of the bone, will be reduced to a minimum. Splints may be improvised from blankets or wooden material, and applied outside of the clothing so as to steady the parts. These dressings should not be too tight.

In cases in which there is hemorrhage, in compound fractures or crushed fractures which require special care in dressing, it will become necessary to remove the clothing previous to transportation of the patient, preparatory to permanent dressing. The clothing should generally be removed by cutting instead of removing in any other manner. The ingenious surgeon will be always ready to adapt himself to surroundings, and render serviceable any material which may be obtainable, in the application

of these temporary dressings. Thin pieces of board, a blanket, a sheet, a towel, almost anything, may be utilized by the man fertile in resources, to temporarily provide for his patient previous to and during transportation to a permanent resting-place. This very faculty of adaptability to emergencies, characterizes the successful surgeon, the man of brains. He who is not equal to them would much better carefully bury his pretenses.

Is is not the purpose of this communication to deal specifically with the handling of individual fractures, but in this connection of the immediate dressing and transportation of such injuries, it may be well to refer to a few of the more important.

The immediate care of fractures of the spine and of the pelvis, must be most judicious. The patient should be placed on a hard, smooth surface, and secured so without jolting or jarring the litter in transportation.

In the injury to the vertebra, it is well to maintain gentle traction. In general, the clothing should be removed by cutting away with shears, and in no way should any motion of rotation or otherwise than the slight traction, be permitted.

Fractures of the ribs, jaw, arms or clavicle, can usually be transported without material difficulty. Supports should be provided for them to prevent motion, thereby avoiding injury to the soft parts or the infliction of unnecessary pain. In most instances it is quite unnecessary to remove the clothing, splints or supports being temporarily applied and firmly bandaged on without producing undue constriction of the parts.

In cases of compound fractures, it may become necessary to remove the clothing, which should generally be accomplished by cutting, in order to check whatever hemorrhage there may be.

Fractures of the femur at the neck, being generally only partial or impacted, and as this condition is the best possible one for rapid union, unusual caution should be exercised in the removal. A well padded, long splint, extending from the axilla to the foot, should be applied and fastened with a strong and wide bandage at the hip, and stout bandages at other points so as to fix it firmly. The clothing in this instance should not be removed. This dressing should be adjusted with as much care as

possible, and as little motion, save that the foot should be placed so as to guard against too much eversion or inversion.

It was my pleasure only a few days since, to see two cases at the clinic of our president, Gen. Senn, and to hear him discuss the question with his usual evidence of thorough familiarity with the subject in hand. They were cases of impacted fracture of the neck of the femur, which had been in the Presbyterian Hospital for some time and in which bony union had taken place. There was some shortening, but the results were very good. The illustration of the Rose-Nelaton line as of great diagnostic importance, was made and ably demonstrated.

For fractures of the shaft of the femur or of the leg, the dressing of plaster of Paris and blanket will be found most adequate to maintaining the limb in position, especially so if the patient must be removed to any great distance. The blanket may be cut the length of the thigh or leg, as the case may be, and being soaked in the solution of plaster, quickly applied. The patient having been carefully transported to his permanent resting-place, the clothing should be immediately removed, and this generally by cutting instead of in the usual manner. Every possible chance of increased injury to the soft parts must be carefully avoided.

Here also at once must be considered the general treatment of the patient, looking to the best possible results from these injuries. The condition of shock must be attended by the use of stimulants, and, if necessary, by the hypodermic use of morphine, as the indications may present. The indications for the general treatment then, are to replace the parts as nearly as possible, in their normal condition, then to maintain them by means of suitable dressings and to prevent or control inflammation. It is considered of the utmost importance that fractures should be replaced in the position in which they are to be maintained, as early as is possible, after the receipt of the injury. If the patient is seen before much swelling arises, the broken bone should at once be restored to place or as nearly so as may be practicable.

Right here it may be proper to call attention to the general impossibility of restoring exactly to their original position, fragments which overlap or override, but nevertheless they should be

placed in such position as early as practicable, in order that as little deformity as possible may result. A fracture that is not replaced at a very recent period after the action, will present various difficulties which do not, to any extent, exist a short time succeeding the injury, such as increased resistance on the part of the muscles, adhesions in their fibers, and effusion about and in the injured parts. Then, too, the swelling compels the limb to still further shorten, and the constant irritation to the soft parts of the broken fragments, increases the muscular contraction and rigidity.

Of primary dressings there are two principal varieties, the roller and the many-tailed bandage, their use being employed not only to support and compress the muscles in order that contractility may be controlled, but to protect the parts against direct pressure of the permanent dressing. This object, however, in the first part, may almost generally be obtained by the said splints themselves, and the second part be much better accomplished by thin cotton sheeting applied.

Again, the roller and many-tailed bandage may prove a source of considerable danger in the hands of the inexperienced. The danger of ligation from swelling cannot be too clearly understood, and on general principles it will be well to bear in mind that it would be much better that no kind of bandages be employed next to the skin.

Many materials have been employed for the permanent dressing — wood, lead, iron, copper, tin, zinc, paper, etc., have been used in the construction of splints. Then again, fixed dressings are constructed of starch, plaster of Paris, dextrine, silicates, shellac, etc., and by some surgeons are much employed, although their popular favor has been one of much fluctuation in the professional mind.

Many of these suggested materials are of value in different conditions of fracture. In a recent case of compound, comminuted fracture of the ulna and radius from a gunshot wound, I have used a splint made of manilla paper, constructed of circular, longitudinal and oblique strips, stiffened with gum sandrac, and varnished with the same over all. A square was cut open at the point of entrance, for purposes of drainage and the application

of antiseptic dressings. The result was quite satisfactory, there being a shortening of about three-quarters of an inch.

In another case of a freighter run over by a freight-wagon loaded with 5,000 pounds of ore, fractures were sustained of the sternum, four ribs on the left side and two on the right, and the paper dressing was used, applied over sheets of cotton, with good results. It possesses the advantage of being not only light, but very firm if applied in strips and afterward varnished, and is not as difficult as the plaster of Paris dressing, to remove. Then, too, if well constructed, it retains its continuity when cut open, so that it may readily be re-applied to the same case after inspection of the parts. It has been my custom, where I have used this dressing, to apply the strips in various directions, using a mixture of ordinary glue and gum sandrac, which is easily made by adding a little acetic acid, and which makes a very hard cement and one which does not soften even by excessive perspiration, as often occurs in hot climates. After the dressing is applied, it may be varnished with an alcoholic solution of the sandrac gum or shellac, rendering the outside harder than it otherwise would be. This dressing may at any time when it is desirable for purposes of inspection, be readily cut open with ordinary plaster shears, and re-applied and tied with tapes. It is not difficult to apply, is light in weight, and sufficiently durable for many fractures of the arm, leg, ribs or jaw.

In one case of compound, comminuted fracture of the jaw from the kick of a horse, which came under my care and which had united so that the teeth did not antagonize properly, and the symphysis was thrown out of the median line, I was obliged to refracture and straighten the deviation. After removing several spicula of bone, together with nearly 100 "screw worms" from the wound, I made a cast of the jaw, constructing the paper splint over the cast. This splint was then applied, fastening it with tapes tied over the head, and the most satisfactory results obtained.

In cases of rib fractures, this dressing in my hands has proven sufficiently durable for all purposes, and is much more agreeable than adhesive plasters, especially in hot countries, and possesses the additional advantage of being very light. Then, too, there

is not the slightest elasticity to it. It probably involves more labor than many other dressings of this character.

It is not my purpose to go on with particulars of the multitude of other dressings employed in this class of injuries, but I will refer finally to the dressing of compound factures. Here provision must be made in the dressing for proper drainage and asepsis. It is in these fractures that the paper splint may be used to great advantage, being easy to cut through in order to expose the wounded parts. The laceration should be thoroughly cleansed with proper antiseptic solutions, and all fragments of foreign material, such as pieces of clothing, as in gunshot fractures, carefully removed. In a compound, comminuted fracture of the femur, which I once had under my care, I not only removed pieces of the overcoat and underwear and several small spicula of bone, but several tooth-picks which were in the overcoat pocket.

In closing, I would refer back again to the medico-legal aspect of these injuries, and the frequency of suits at law from the damages arising therefrom. Without the surgeon having taken proper precautions for his own protection, it is no difficult thing for the friends and neighbors of the patient to be brought into court and swear what a beautiful leg he had before this incompetent and negligent man attended him, and the surgeon only has himself to fall back upon. It is not only proper to keep careful records of the history of these cases, but from time to time, to take in a professional friend as an observer. This latter, of course, would only become necessary in private practice.

Maj. A. C. Girard, Surgeon U. S. A., next read a paper on "Sanitary Duties and Rights of Medical Officers, as Affecting their Relations with the Commanders of the Line."

THE SANITARY DUTIES AND RIGHTS OF MEDICAL OFFICERS AS AFFECTING THEIR RELATIONS WITH THE COMMANDERS OF THE LINE.

BY ALFRED C. GIRARD.

Major and Surgeon U. S. Army.

Mr. President and Members of the Association:

It is with a certain amount of trepidation that I appear before this learned assembly of medical men, who, while preparing to obey their country's call to repel force by force, are perpetuating the lessons taught by former wars and building on the experience of the past; who more than that, have combined together to increase their usefulness by interchange of views and united action.

My trepidation is caused by the consciousness, that one must be bold indeed, to presume to lecture before this assembly on a subject, the theory of which is well-known to every member; my excuse is, that it has been my privilege, if I may so call it, to practice for over 27 years in the military service of this country the principles, on which I propose to speak, and may therefore be permitted to express my views before members of my profession, who, while they probably hold a more exalted, and surely more profitable position in their communities, have not had the opportunity of daily application, and consequent experience upon which I am basing the justification of this paper.

The peculiar relations necessitated by the centralization of power affect the military surgeon as well as every other individual of an army; in fact more so, for while down to the youngest corporal in the company, every member of the force has his particular sphere of command, the medical officer, aside of these functions in his own department, is deprived of this prerogative and still his influence on the military machinery must be of vast importance. I do not refer to the medical officer as prescriber of pills or powders, bone-setter or operator. Most of these functions are only necessitated by his inability in the exercise of a higher grade of usefulness to control all the evils, which decimate the effectiveness of military forces. His greatest influence for good lies in

his being the sanitary officer of his command, its expert in that line, omnipresent in every phase of army life, but only as a brain without an arm. How to unite the two will be the object of my remarks.

While military hygiene was not unknown even in the days of the ancient Greeks and Romans, it has not until late years, when progress of investigation and the problems of aggregation of population under more civilized methods of living brought it into the rank of special sciences, attained its proper position in military organization. Efforts made in that line were more of an individual character, based on the relations of particularly gifted medical men to their commanders. Examples of this kind are historical from the Napoleonic times to the present day. The War of the Rebellion brought forth numerous efforts to assert the importance of this relatively new science. The armies of the old world, dealing with large bodies of men, where the necessities of this new role of medical officers became more apparent, owing to this very congregation of greater numbers, took the lead and established by regulations the sanitary functions of their military surgeons, thus putting them on the proper footing. In our own army the action of the authorities was tardy and, as far as I can learn, did not take a definite shape until 1876 and then in too vague a manner to accurately define the sphere of the medical officers as sanitary experts.

I believe that specific regulations covering every part of sanitary duties are desirable, especially for the service of the National Guard, and the purpose of this paper is to demonstrate the correctness of my view and to outline the rules to be covered.

A paper read by an old volunteer surgeon at the meeting of the military surgeons of the National Guard in Milwaukee gave the first impulse to the selection of my subject. He related the difficulties encountered by inexperienced volunteer surgeons in their attempts to abate evils affecting the health of troops (when they encountered ignorant or tyrannical commanders) and the total lack of authority in such questions.

I opened the discussion with considerable consciousness of the altered state of affairs at the *present* time and quoted paragraphs 1642 and 1643 of the Regulations as an evidence of the progress

made in sanitary military science since the war, in our army organization.

Fortunately for me my medical friend was not prepared for discussion, or he would soon have convinced the audience of what I became aware of, while I was extolling our progress, that these paragraphs (really the only ones in the regulations defining our status as *sanitary* officers) were *so vague* as to allow of many constructions, and *the remedy* (if our counsel was not heeded) *so remote* that with an obstreperous commander the right of interference, even of advice, would be practically nil.

For the benefit of those who are not well acquainted with the Regulations, I will here give the wording of these paragraphs, as it is necessarily a part of my argument.

"1642. An important part of the duties of a medical officer is the supervision, under the direction of his immediate commander, of the hygiene of the post or command to which he is attached, and the recommendation of such measures as he may deem necessary to prevent or diminish disease among the troops. For this purpose he shall examine, and note in the medical history of the post, at least once a month, the sanitary condition of all buildings, the drainage, the sewerage, and the amount and quality of the water supply, the clothing and habits of the men and the character and cooking of the food, and shall immediately after such examination make report thereof in writing to the commanding officer, with such recommendations as he may deem proper. The commanding officer shall return the report with his views and action indorsed thereon and if he deem the action recommended impracticable or undesirable, he will state fully his objections. The indorsement will be recorded in the medical history of the post, and the report and indorsement will be forwarded by the medical officer, through the regular channels, to the surgeon-general for his information.

"1643. Officers of the medical department shall unite with officers of the line in encouraging and promoting the best system of cookery, as a measure of the greatest sanitary importance."

While still deficient on certain important sanitary matters, these regulations *as a whole* appear *sweeping enough* and have as a rule proved so in the regular army; but this is *not due to the regulations*

as much as the *personnel* composing the army. The medical officer of the regular army is *continually* in contact with troops and his daily cares are the thousand little items connected with his sanitary duties to such an extent that they become second nature to him. Questions which to you gentlemen of the National Guard do not occur perhaps *in a life-time*, are his *daily bread.* Unlike his professional brethren in civil life his principal duty is the prevention of disease, under all sorts of circumstances, in various climates and seasons, under privation and relative luxury, generally without opportunity for consultation, compelled to act on the spur of the moment, but all in accordance with the iron rules necessary to bind together bodies of men, for life or death. His "Parkes' Hygiene" is his book of devotion and it is more familiar to him than the bible to most people.

The result is, that the vague rules laid down in Par. 1642 have a specific meaning to him, systematized in his brain. He is a *specialist* in that line.

His authority however is *limited* and he needs the executive arm of the *commander* to have his knowledge put into practice. In our regular army this commander is generally an officer of long service and great experience, who though he may not have made a study of hygiene, has learned to appreciate its beneficial effects, has been in daily contact with us specialists on the subject and has become accustomed not only to *yield* to the views of his medical officer, but to *request* them in all matters in any way relating to sanitation.

Even in the regular army, under these favorable circumstances, the *sweeping* and yet *meager* regulations on sanitary matters in our "blue book" may have an effect different from that intended. A medical officer, more fond of other pursuits, may not read *between the lines* and in a perfunctory manner carry out the *letter* of the law. There is nothing *particularized* sufficiently to enable a commander to charge him with his numerous sins of omission, and as long as he makes out his "sanitary report"—(or has his steward make it out for him),—and signs it (covering the few items mentioned in our paragraphs) he will be safe from his military superior. Let him attempt this with the specific regulation

of the armies of the Old World and he will find himself shortly called to task.

On the other hand we find even among our veterans men who are so convinced of the superiority of the ways of the "Old Army," or so imbued with their infallibility, that the sanitary efforts of the medical officer will at times meet the rebuff, that he is exceeding his sphere. The result is that the medical officer, if he has been *cautious enough* (and has had the time) to put his advice in writing, forwards his paper to higher authority through the regular channels and after many a day, long past the need of following his suggestions, receives perhaps notice that his views are sustained by the War Department.

I may be permitted to relate here an incident of the earlier years of my service, illustrating the case in point.

A party of troops were sent in quest of escaped prisoners on our southern coast. They were about to embark for a desert island and the end of their journey was at least 20 miles off. I noticed that none of them were carrying canteens and cautioned the non-commissioned officer in charge that he would find no water on his whole journey, and that it was imprudent to start without the canteens filled. Fortunately my suggestion was heeded, but I was reprimanded and threatened by the commanding officer for exceeding my prerogatives. Although Par. 1642 was not even in existence, I referred the question to higher authority and my action was sustained. The approval arrived long after the need for it was over: the redress provided for by Regulations proved of no practical benefit.

It appears therefore that even in our regular army, regulations of a *specific* nature making certain sanitary work a *duty* would have a beneficial effect on our relations with our commanders and increase our efficiency.

Now what is the position of the *National Guard* and *volunteers* in this matter?

Their medical officers enter as *a rule* upon their duties *without any preparation* whatever. Sanitary science is generally *slighted* at colleges and in the practice of their profession they are rarely called upon to go *beyond* house and sick room sanitation. Their duties, if in the National Guard, are either of an honorary nature,

or if they have seen active service, it was perhaps for a week or so at a State camp. Filled with the *noblest intentions* they labor under the disadvantage of having to become familiar with an entirely *new mode of existence* and are returned to their civil pursuits about the time they are learning to orient themselves. A change of administration takes place, — the colonel and his staff resign as a matter of course, and new medical officers step in.

Do *they* take up the thread where left by their predecessors? No, they have in their turn a short existence, not long enough to enable them to *realize*, much less to *systematize*, the multifarious duties incumbent upon them. They may have *studied* military hygiene and attempt to carry out some system, but here again they meet with the *very vague support* and *guidance* on the part of the regulations.

On the other hand their colonel or other commander may be *excellent* at drilling in the armory, a *good disciplinarian*, careful of the *welfare* of his men, as well as he knows how, but generally is *guiltless of a scientific education in sanitary matters.* (How can he be blamed for it?) Unless they are made a special study, they are acquired only *by long years' experience*, which he is unable to gain. He sees his command generally under certain *fixed* circumstances, and has no *opportunity* of securing the knowledge. If he is *arbitrary* by nature, he will resent the interference of the medical officer, should it conflict with his notions. If he is *ignorant* he will, as a rule, not admit it and override the advice or set it aside. You will say, that the regulations *provide the remedy.* This reminds one of the Russian proverb, "God is far, but the Czar is near." The remedy is so *weighed down* with red-tape, that it is *only effective* under our peculiar post system in the regular army. With *inexperienced* medical officers and commanders *uneducated* in military hygiene, the only remedy, which at the same time will *indicate* to *the surgeon his duties and* to *the commander the surgeon's rights* are *well prepared* regulations.

These regulations should not be *cumbersome*, taking the place of text-books or study; but sufficiently *explicit* to lay down in a peremptory manner his action under the various circumstances in which he may be placed. While establishing his duties they would also determine *his right to be heard. Conflicts* between

him and his commander would be *narrowed down* to the surgeon's acting within the regulations of the commander's opinion as to the practicability of the recommendations *as affecting military necessities.* The *specified* right to express an opinion, would, if prudently exercised, carry with it *conviction.* On the other hand, the commander could exercise the necessary supervison over the surgeon, knowing that certain *specified* duties were demanded by the regulations. The result would be a *clear situation*, favorable to the interests of *all parties* concerned, and a *more efficient* sanitary service.

I may now be permitted to outline these regulations, and by indicating the many sanitary duties incumbent upon medical officers, I hope still further to carry your conviction that my suggestion covers a long needed want.

REGULATIONS FOR THE SANITARY SERVICE.

Post Service.

1. The senior medical officer of a post will be its sanitary officer. He may delegate to his subordinates such part of his duties as he may see fit, but will remain responsible for the efficiency of the sanitary service.

2. He will at least once a week make a sanitary inspection of every part of the garrison occupied by enlisted men, particularly as to police of the buildings, proper use of the means of warming and ventilation, sufficiency of lighting, bedding, clothing and personal cleanliness.

3. He will at least twice a week examine the messes, as to the cleanliness and police of kitchen and utensils, system in variation of food, its proper preparation and serving, sufficiency of diet, condition of bread, quality of meat, proper preparation of fresh vegetables.

4. He will at least once a month visit all public buildings of the post and ascertain their sanitary conditions.

5. He will make a report *in writing* to the commanding officer, when practicable and time permits of anything unfavorably affecting or likely to affect the health of the command, and recommend the proper remedy.

When no action is taken, or unsatisfactory reasons given for refusal to carry out the recommendations, he will forward a full report of the case through the post commander to the next higher authority.

6. On the first of every month he will consolidate the results of his inspections, his recommendations and the action thereon through military channels to the adjutant-general of the army, or if serving in State troops to the adjutant-general of the State.

7. He will keep a diary of his inspection and make note of all defects found, and the action taken by the commanding officer. This diary shall be called the "Sanitary Diary" and form part of the hospital records.

8. Whenever any buildings are about to be erected at a post, he shall be made acquainted with the proposed location and plans and shall give in writing his opinion to the commanding officer on the sanitary topography of the location, including condition of ground, sub-soil, natural drainage, facing and on the sufficiency of cubic capacity, surface space, natural lighting, proposed warming, ventilation, water supply, means of removal of fluid offal for the purposes of which the building is to be erected, with recommendations of such changes as he may deem necessary, being governed in his action by paragraph 5.

9. It shall be his duty to advise the commanding officer as to drills, gymnastic exercises and marches, as far as they may unfavorably affect the health of the command; and to give his opinion when the dress ordered is not in accordance with sanitary rules.

10. He will see that the command is properly protected by vaccination, and to that effect, on taking medical charge of a post or regiment, examine the vaccination records of all the men, re-vaccinate those requiring it, and vaccinate all recruits who have not been vaccinated in the service or cannot furnish satisfactory evidence that they have been vaccinated successfully within five years.

SERVICE IN THE FIELD.

A. *On the march.*

1. The senior medical officer of a body of troops aggregated under one command shall be the chief sanitary officer.

2. He shall issue, with the approval of the commanding officer immediately on taking charge, such general instructions to the medical officers of his command, as may be applicable to the service in contemplation. He should advise on length of marches, halts, etc., and draw up a set of plain rules to be promulgated by the commanding officer, directing the men how to manage on the march (if exposed to great heat, cold, or long continued exertion), how to purify water, clean their clothes, etc. If the march is to last for some time, and if halts are made for two or three days at a time, write a set of instructions for ventilating and cleaning tents, regulation of privies, etc. Whenever conditions vary or emergencies arise, he shall modify these orders or add to them. He shall make daily inspection to see if these orders have been carried out.

3. He shall cause a medical officer to accompany the officer sent forward for selection of camping places to advise on the medical topography and assignments of the various parts of the command.

4. If the command exceeds a regiment he shall detail as many experienced medical officers as there are brigades as sanitary inspectors. These officers will report to him daily or oftener if necessary the result of their inspections.

5. The regimental medical officers will cause all men with sore feet to report before starting on the march, see that the men carry their kits, neither more nor less (when they have to carry them), that the canteens are filled on starting out, that they have their breakfast. They should provide themselves with tickets completed all but name of soldier and length of time of disabled men to be carried. They should cause orders to be issued prohibiting the removal of clothes, to prevent chilling, at the end of the march and clothes to be changed not sooner than an hour afterwards. They should cause all footsore men to report themselves at once. Likewise an inspection of sore feet should be made on arrival in camp.

In all other sanitary matters, if the command is a regiment or less, the rules of Par. 1 and 2 will govern.

SANITARY SERVICE IN CAMP.

1. The medical officer acting as sanitary inspector shall advise as to the distance between tents, with a view "to the greatest amount of order, cleanness, ventilation and salubrity."

2. He shall see that privies are located at sufficient distance from camp, that the pits are dug "20 to 50 feet long according to the size of camp, 10 feet deep," 2 feet wide at the top and 3 at the bottom, in "standing" camps; and in camps for a few days, a trench from 10 to 25 feet long, 2 feet deep and 2 feet wide at the top and 1 foot at the bottom, and that the contents are covered every day with several inches of earth (the former when 4 feet from the surface of the ground should be filled up); also that a urinal draining into the pit be constructed.

3. He shall see that police parties be organized at once to made sure that the camp is kept in proper police.

4. If a command is hutted, he shall see that proper regard is shown to drainage and ventilation.

5. He shall advise as to location of slaughtering pens and see that proper disposition is made of offal by burying, also the removal and burial of dead animals.

6. He shall with the commissary officer examine beef purchased on the hoof and recommend the exclusion of animals unfit for beef.

7. He shall see that the water supply is carefully protected from contamination, — that, if a command is camped on a running stream, the proper sanitary rules are enforced as to the method of obtaining water for drinking, washing, and watering purposes, location of bathing places, etc.

8. He shall make daily inspection of the food, as issued and as cooked, advise as to the proper methods of preparing food and proper disposition of the refuse matter.

9. He shall advise as to the proper location of burial grounds and the steps to be taken to facilitate the identification of graves.

TRANSPORT OF TROOPS.

1. In transportation by rail the medical officer acting as sanitary inspector shall see that each car containing troops is provided

with one full water barrel at each end (safely covered) and that the barrels are refilled whenever convenient,— that the cars containing troops are properly ventilated and heated, and that overcrowding is prevented, if possible.

2. In transportation by water he shall make a careful sanitary inspection of vessels destined for the purpose,— as to water supply, capacity, facilities for privies and washing, ventilation, cooking arrangements, means of disinfection and make a report thereon to the officer in command before embarkation.

3. During the voyage he shall make daily inspections of every part of the vessel to detect and report lack of cleanliness of the men, insufficient police, nuisances, insufficient water supply, inefficient cooking. He will watch carefully for epidemic diseases, immediately report their appearance and advise as to the best methods of isolation, disinfection and other preventive measures. On long journeys he will make careful investigation to detect scurvy at the earliest moment and to advise issue of antiscorbutics.

EPIDEMICS.

1. On the occurrence of epidemic disease in any camp, garrison or command the medical officer attending a case shall at once report it to the medical officer acting as sanitary inspector, who will make careful inquiry into its history and predisposing causes and make a report in writing to the commanding officer, recommending the proper measures to be taken, especially regarding isolation, prevention of crowding, whitewashing of infected localities, destruction of infected articles, removal of garbage, disinfection of privies, urinals, sinks and drains, condition of ventilating appliances, the water supply, proper cooking of rations, avoidance of unripe or decomposing vegetables and fruit, reduction of duty, protection from wet, daily airing of bedding, healthy amusements and exercise, prevention of intemperance, moving of camp, etc.

2. He shall submit instructions for the guidance of the company officers to facilitate prompt detection of the cases, for first aid, for removal and disinfection in their respective commands.

3. In case of cholera, yellow-fever or small-pox he shall apply for a special sanitary detail of troops of the line, under charge of

a commissioned officer, whose duty will be the disinfection of infected localities, sanitary police of the camp, prevention of nuisances of any kind, the removal of sick, the burial of dead, the destruction of infected clothing etc.

4. In case of appearance of small-pox, he shall make or cause to be made an examination of every person in the command as to their protection by vaccination and in all doubtful or unprotected cases vaccinate at once.

In conclusion I request this assembly to bear in mind that these regulations are not considered in a finished state, but indicating in a general way, what would have to be systematized carefully. Unfortunately, I have not had the time to rewrite and transpose as I would wish to.

While I was writing this paper and questions of administration came up not clearly of a sanitary nature, the need of more extended regulations for the whole medical service became more and more apparent and I do not know of any work more appropriate for your National Association, than to compile a code suitable for adoption by the various States. The very essence of usefulness of this National Association lies in the promotion of uniformity in the medical service of the National Guard throughout the United States.

I would therefore suggest, that a motion be made by some active member of this association, that it issue invitations for a prize essay for regulations for the medical department of the National Guard, to be delivered within six months to the secretary of the association, in the usual manner with a motto, the name of the author in a sealed envelope — that a committee of five experienced officers be appointed, to whom these essays should be submitted for decision as to award, that the envelope containing the name of the successful essayist, if any, be opened at the next annual meeting and the crowned essay become the property of the association.

These regulations could then either be adopted or recommitted and finally be recommended for adoption by the proper authorities in the various States.

NOTE. — In the preparation of this address I have utilized the works on Hygiene of Morache, Levy, Roth & Lex, Parkes and the British Regulations for the Medical Service.

A full discussion followed the reading of Maj. Girard's paper, which was referred to the committee already appointed to consider the recommendations which it comprehends.

Maj. John Van R. Hoff, Surgeon U. S. A., was next introduced and read a paper entitled "Some Notes on Military Sanitary Organization."

SOME NOTES ON MILITARY SANITARY ORGANIZATION.

BY JOHN VAN. R. HOFF.

Major and Surgeon, U. S. A.

Mr. Chairman and Gentlemen: It has been said that war is a wide-spread epidemic of injuries and special diseases, whose victims are the young and the strong, men ordinarily little exposed to these conditions.

To meet this epidemic the medical officer exists, and his entire training, medical and military, has this contingency in view.

The statistics of modern wars appall one with the magnitude of their casualty lists,— and amply support the statement above set forth.

		Total Strength.	Total No. of Cases Reported.	DIED.		
				Wound.	Disease.	Total.
War of Secession, 1861 to '65.....	Union Army.....	2,100,000	6,454,834	93,969	210,400	304,369
	Confederate Army	Estim	ated.	50,000	150,000	200,000
Franco - Prussian War, '70 to '71..	German Army....	1,163,424	757,200	28,278	17,332	45,610
	French Army.....	Estimated	460,521			136,540
Turco - Russian War	Russian Army....	592,085	919,315	21,699	45,791	67,490
	Turkish Army....	Unknown.				

There have perished in the wars of the last 30 years 2,500,000 men.

Consider for a moment the responsibilities of the medical officer upon whom is thrown the care of these almost numberless thousands. His work is not alone to dress their wounds or treat their diseases, but from the moment a man falls on the fighting line, or is taken sick, until he is returned to duty cured, is dis-

charged for disability, or dies, the *entire* responsibility for him comes upon the medical department. It carries him to a place of safety, houses, feeds, clothes him, keeps his accounts, in fact does everything possible to be done for another, and all in addition to the professional care of his ailments. Can this be accomplished without thought, training, experience, and preparation?

"In 1863, at the battle of Gettysburg, 14,193 of the wounded of the Union army were left on the field of battle requiring professional care, and 6,802 of the opposing force, in all 20,995. The strength of the Union army, which provided hospital accommodations for these wounded, may be considered as 90,000. So that by one *coup* a number equal to more than 23 per cent. of its strength suddenly required succor and professional care, shelter, food and transportation."—Report of the Medical Director; Army of the Potomac.

My purpose is to consider here simply men—not material or function. The subject of military sanitation is far too broad to admit of full and proper consideration in a paper, the scope of which is simply a brief general outline thereof.

Military sanitary organization may be considered under two heads:

1st. The Army in Peace.

2d. The Army in War.

For all practical purposes the army of the United States in peace consists of the regular establishment—simply a military nucleus—and the National Guard, the latter of which should, through your instrumentality, become equally important as a source from which trained sanitary soldiers can be drawn, as well as trained line soldiers.

The sanitary organization of the permanent establishment on the present peace footing, consists of officers of the medical department, and enlisted men of the Hospital Corps. The latter serving under the command of the former.

The duties of the Medical Officer are professional, administrative, and military. He is charged with the professional care of the officers and enlisted men of the command to which he is attached—and when practicable, their families. He belongs to

the general staff, and is a staff officer of the commanding officer under whom he may be serving.

His administrative duties pertain to the management of his department, the preparation of reports, returns, requisitions, etc., etc.; the sanitary supervision of the command, its habitations, food, water, clothing, environment, etc.

His military work consists in the disciplining, training, and instruction of the men of the Hospital Corps. His multifarious duties bring him into official contact with every branch of the service — and his work is *unceasing*.

The Hospital Corps is a body of sanitary soldiers, at this time some eight hundred in number, whose duties pertain to the care of the sick and wounded.

Its members are enlisted from civil life, or transferred from other branches of the service, and pass through a six months course of training in a company of instruction before being assigned to the various hospital corps detachments serving at every post throughout the country.

Their training in the company is of two kinds — military and technical.

The military training is identical with that of other recruits, the chief object of which is discipline. In drill they are taken through the school of the company, in which they are required to be thoroughly proficient; they are taught the manual of arms, and use of the rifle, for though they will ordinarily neither carry nor use fire-arms, it is held that no man can be a soldier who is unfamiliar with their use — and men of the Hospital Corps *must* be soldiers.

It goes without saying that the company of instruction takes care of itself, cooks its own food, polices its own quarters and grounds, etc., etc., in fact performs the numberless minor duties required of all military bodies.

The technical training in the company consists of lectures, recitations, demonstrations and practical work in simple anatomy, physiology, nursing, cooking, pharmacy (principles of).

Bearer drill with hand litter, ambulance, improvised methods, etc. . 1st. Aid and bandaging, appliances of the medical department in post and field.

Field work, pitching, striking, loading and unloading field hospitals, their management, etc. Care of horses, stables, etc.; driving.

Of course this is the merest outline, but it gives some idea of the work required in the forming of a sanitary soldier.

When sufficient proficiency has been reached the men are relieved from the company and assigned to post detachments, where their practical work begins as nurses, cooks, dispensers, clerks, ambulance drivers, attendants, etc.

It will be observed from the foregoing that the Hospital Corps, U. S. A., is really a military training school for male nurses, in which a very high character of training is given, the tendency of which is to develop the physical, intellectual and moral qualities of its members. Moreover, it equips a man with special knowledge of great usefulness to him should he at the end of his enlistment return to civil life, while should he remain in the service he will be in the line of promotion to the most valuable positions attainable by enlisted men in the United States Army.

In addition to the Hospital Corps and supplemental to it there are detailed in every company in the army four privates, known as company bearers, who are instructed in 1st aid and bearer work and are sanitary emergency men. They belong to the combatant force and are only used when the Hospital Corps is not sufficiently numerous to meet the demands of an engagement.

The medical organization of the National Guard, as I understand it, consists of medical officers, hospital stewards, and in some States an ambulance corps, corresponding to the company bearers of the permanent establishment, temporary details from the line.

We have here magnificent material lacking in nothing except, possibly, organization.

It will be observed that the medical department of the regular army is a staff corps with central organization.

The medical officer may be assigned to duty *with*, but he does not belong *to*, any line organization,— he is a general staff officer, and, as such, he reports as well to the war department as to his immediate commander; he does not hold his position at the will of the commander, but at the war department, and conse-

quently in a proper military sense, has independence of action. I believe that such should be the status of the medical officer of the National Guard.*

As the experience of all nations has taught this to be the most efficient method of medico-military organization it would seem

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* Since the foregoing was written, I have learned that the organization of the sanitary department, as herein outlined, has been adopted in the National Guard of the State of New Jersey:

"Adjt.-Gen. Stryker under date of March 31 announces, among other things, the establishment of a separate department of the National Guard, to be known and designated as the medical department of the National Guard of New Jersey; that all medical officers of the National Guard now holding commissions, and all other persons who may hereafter be commissioned as medical officers of the said National Guard, shall constitute a medical staff, and that the said medical staff shall be under the direction and control of the said medical department; that all hospital stewards now in service of the National Guard and all persons who may hereafter be appointed hospital stewards shall be under the direction and control of the said medical department; that there shall be regularly enlisted, for a term of five years, as privates in the National Guard, twenty-four men, each to be over eighteen years of age, to serve as part of a "hospital and ambulance corps," and that these men shall have all the rights and privileges of enlisted men in the National Guard, and be under the exclusive direction and control of the said medical department; that the commander-in-chief, on the recommendation of the surgeon-general of the National Guard, shall appoint two medical inspectors, each with the rank and emoluments of lieutenant-colonel, and that the said medical inspectors shall be under the direction and control of the said medical department; that all medical officers of the National Guard shall hold their commissions during good behavior, and be subject to the regulations of the National Guard service, the same as all other commissioned officers; that the surgeon-general of the National Guard shall be charged with the administrative duties of the medical department. The surgeon-general shall assign to permanent duty in the various commands of the National Guard the medical officers now connected with the said commands, each officer to retain the rank he now holds; no recommission shall be necessary, and that these officers so assigned shall continue to act as a part of the staff of the commanding officer of the command to which they are attached and assigned; medical officers of the National Guard may be detached and assigned to temporary duty by the surgeon-general should the interests of the medical department so demand, but the detachment shall not continue over a reasonable time nor to the detriment of the commands to which officers are permanently assigned."

that such should be, if it is not already so, the method adopted in the National Guard.

Consider then gentlemen the organization of the medical department of the National Guard, and if not now perfect let us seek to make it so, for no more important subject can claim our attention.

The organization of a Hospital Corps in the National Guard upon the model of that of the permanent establishment is of almost equal importance with the organization of the medical department. Such ambulance corps as now exist have not, I believe, a distinct and independent status recognized by law, but are made up of details from the line; they correspond in organization to the company-bearers of the regular army and are therefore in no sense of the word permanent. This defect has in a measure been recently corrected in the National Guard of the State of New York, by order, *not law*, but even as excellent as are the sanitary arrangements of that Guard, and as devoted as are its medical officers to its advancement, there yet remains room for improvement, and always will until a Hospital Corps, separate and distinct, becomes an integral part of the State forces.*

It requires at least two per cent. of the strength of an army in active service to take care of the sick and wounded. Upon this basis there might be organized in each State a Hospital Corps of strength equaling two per cent. of its National Guard.

This corps should be divided into regimental detachments of proper strength, and companies containing, say, three commissioned medical officers, thirteen non-commissioned officers, one trumpeter and from forty-eight to eighty privates. It should be uniformed, and be a legally recognized part of the National Guard, subject to the same regulations, entitled to the same privileges and raised by recruitment, as are all other organizations of the Guard.

But, since the duties of the corps are special, and essentially

* This remark does not apply to the National Guard of New Jersey, which is about to organize a Hospital Corps on lines coincident with those of the permanent establishment.

in the line of medical education, *medical students* might furnish the material, and *medical schools* the means of instruction.

These companies should not, however, be wholly composed of medical students, but a certain proportion should be recruited from among intelligent men in other pursuits, who are desirous of familiarizing themselves with "first aid" methods, etc.

The proposed Hospital Corps of the National Guard should be uniformed, equipped, instructed and drilled in like manner as is the Hospital Corps of the permanent establishment in order to insure entire uniformity of action between organizations which must serve together in the event of hostilities. It should be officered by medical officers of the National Guard, who would be responsible for its proper discipline and instruction, and the corps should always be under control of the medical department.

Such an organization would correspond to the divisional (litter) bearer companies of the German system. It would not only furnish soldiers trained to meet the sanitary emergencies of the march, field day, camp, and riot in times of peace, but, in active service, of the battle field as well.

It would also supply men skilled in the manifold duties pertaining to military hospitals, both field and permanent.

In addition to the Hospital Corps, an independent organization, composed of sanitary soldiers as already stated, there should be detailed from each company of the Guard four men, to be known as company-bearers, corresponding to like details in the permanent establishment, and who will be instructed as they are, in the first aid and bearer drill, to supplement in *emergency only* the Hospital Corps.

It is important that the status and duty of the company-bearers be clearly understood by the medical and line officers of the National Guard to the end that these official *emergency* men may be separated from the sanitary soldier. I quote from war department decisions:—

"The object of instruction to company-bearers is to insure the constant presence *in each company* of a number of men who can in *emergencies* render temporary aid to the sick or wounded of their organizations, and their duty *during* an *engagement* is to carry

them to the rear until relieved by the members of the Hospital Corps.

"In order that company and other officers may prevent *unauthorized* persons from *leaving* the *firing line* while in action, for the purpose of assisting the wounded, company-bearers are required to 'wear as a distinguishing mark a red brassard around the left arm.' Their designation and duty is in the interest of discipline and the efficiency of the combatant force, and their duty as bearers does not impair their status as combatants."

Thus it will be seen that the functions performed by these two classes of soldiers touch only in emergency, and otherwise widely diverge. The business of one is to fight, the other rescue.

I have already outlined the methods of training and course of instruction used by us in forming the regular sanitary soldier. They are comprehensive and the result satisfactory.

It can hardly be denied that great advantage would result to our country if there could be a general dissemination among medical men of a practical knowledge of all the duties of a medical officer. And I know of no way that it can be so well and so easily done as by the organization of bearer companies in our medical schools.

Let us give thought to this, for it is a large subject. Our active army will always be a volunteer army, and our medical officers the civil practitioners of to-day, who to-morrow may be called upon to undertake the multifarious duties of a position for which their professional training alone does not wholly fit them. If they have, as students, been trained in medico-military matters, they will enter upon their new duties with, at least, some knowledge of the work, and by so much will be of greater value to the cause they serve.

The crucial test of any military organization is its efficiency in active service. The duty of the sanitary corps under this condition, and by which it will be judged, is summed up in a very few words—

To free the front of the army from all sick and wounded, evacuating all serious cases to hospitals on the line of communication or at the base.

It is not my purpose to here consider in detail all the points which lead up to the accomplishment of this object, but only, in a very general way, to indicate what seems to me the best organization of *personnel*, for the first line of sanitary assistance, in other words, battle field sanitation.

Our war scheme, the most extensive and efficient of any military sanitary organization then known (1865) grew out of the necessities of the situation and may be justly claimed to be the model upon which all modern battlefield sanitation is formed. But our own experience therewith ended at the close of the war which brought it into existence, and for its elaboration we must look to the great armies of Europe.

Our Ambulance and Hospital Corps was made up by *details* from the line of the army, and though for the time being was under the control of the medical department, yet it was not really a part of it.

It was an *emergency* organization and as such necessarily could not have the value of a permanent, well instructed, and wholly independent sanitary *personnel.*

Our war organization was based upon a combined regimental and divisional establishment, each working into the other, and both together forming a distinct hospital and ambulance organization for each military division.

There were with every regiment two or three medical officers, one or more hospital stewards, and a certain number of men detailed from the different companies as nurses, attendants, cooks, etc.

The *personnel* of the divisional field hospital, as we learn from the medical history of the war, consisted of a surgeon in charge, with an assistant surgeon as executive officer, and a second assistant surgeon as recorder, all of whom were permanently attached; in addition there was an operating staff of three surgeons aided by three assistant surgeons, and the requisite number of nurses, cooks, attendants, etc., three from each regiment, all detailed for the occasion from the different regiments of the division.

The division ambulance train was commanded by a 1st lieutenant of the line — assisted by a 2d lieutenant for each brigade, a sergeant from each regiment, three privates for each ambulance,

and one private for each wagon. This train consisted of from one to three ambulances for each regiment, squadron, and battery, a medicine wagon for each brigade, and two or more supply wagons. The entire organization, *personnel*, field hospital, ambulance and wagon trains were under command of the surgeon-in-chief of the division.

It has been said by a distinguished medical officer of the army that the views of military surgeons who bore a part in that war are almost unanimous in favor of the organization here outlined. It was the outcome of much experience in actual warfare, and it enabled the best aid and care to be given to over six millions of cases of disease and injury.

Unquestionably excellent as was this system its weak point lay in the fact that its *personnel* was to a great extent borrowed. The conditions then were such as to make this necessary, but in the light of that experience should we not strive to perfect our military sanitary arrangements *now*, to train our own *personnel* against the time of necessity?

As has been stated, sanitary organization in active service is based upon the military divisional unit made up of regimental and other parts. The regimental organization, for five hundred or greater strength, should consist of one medical officer with the rank of captain, and two with the rank of 1st lieutenant, with a Hospital Corps detachment of two non-commissioned officers and eight privates.

This would give with each brigade of three regiments of infantry, one chief medical officer, with rank of major; nine regimental medical officers; six non-commissioned officers and twenty-four privates of the Hospital Corps.

In the United States Army the division is the fighting unit, it should consist of three brigades of infantry (nine regiments); a regiment of cavalry; three batteries of light artillery, and a battalion of staff troops (Engineer, Signal, Hospital Corps), aggregating in all a nominal strength of about ten thousand officers and men.

The sanitary organization for a cavalry regiment is identical with that of an infantry regiment (except that the detachment of the Hospital Corps is mounted). With each light battery there

should be a medical officer, with the rank of 1st lieutenant, and a private of the Hospital Corps, and with the battalion of staff troops, one medical officer, with the rank of 1st lieutenant; one non-commissioned officer and four privates of the Hospital Corps.

The medical director of the division and each chief medical officer of a brigade should have one non-commissioned officer as clerk, and one private as orderly, both from the Hospital Corps.

The distinctively divisional sanitary organization consists of a bearer company of the Hospital Corps, numbering:

(3) Three medical officers (one captain and two lieutenants).
(14) Fourteen non-commissioned officers.
(1) One bugler.
(47) Forty-seven privates.

An ambulance company of the Hospital Corps (ambulance drivers, etc.) numbering:

(3) Three medical officers (one captain and two lieutenants).
(12) Twelve non-commissioned officers.
(1) One bugler.
(1) One artificer.
(2) Two blacksmiths.
(1) One saddler, and
(55) Fifty-five privates.

A field hospital manned by

(3) Three medical officers (one major, one captain, one lieutenant).
(12) Twelve non-commissioned officers, and
(28) Twenty-eight privates of the Hospital Corps.

The foregoing provides for a total sanitary personnel of

Forty-seven (47) officers, and two hundred and ninety enlisted men for each division of ten thousand (10,000) strength, *i. e.*, 3 + per cent.

With the organization here outlined all ordinary sanitary requirements can be met without calling upon the combatant force for a single man. Should extraordinary demands arise these will be met by the employment of as many of the company-bearers as may be necessary, there being, as heretofore stated, four (4)

of these sanitary emergency men in each company. Beyond this additional assistance might be had from *band* musicians who could be instructed in bearer work at the same time with the company-bearers but should be classed with them simply as *emergency men.*

One (1) ambulance should be allowed for each two hundred (200) of strength. One (1) "army" wagon for the medical department of each regiment and one (1) "escort wagon" for a battalion; four (4) "army" wagons for each field-hospital, together with one (1) medicine wagon, one (1) kitchen wagon, and one (1) water cart; two (2) "army" wagons, one (1) medicine wagon, and one (1) water cart should be allowed to a bearer-company and two (2) "army" wagons and one field-forge to an ambulance company, making a total wheeled equipment of fifty (50) ambulances, two (2) medicine wagons, one (1) kitchen wagon, and two (2) water carts; and a train of eighteen (18) "army" wagons, one (1) escort wagon, and one (1) field forge, requiring for mounts for officers and men, and animals for ambulances, wagons, etc., two hundred and forty-five (245) horses and one hundred and eighteen (118) mules.

The ambulances will be driven by men of the ambulance company, and the wagons by details from the various Hospital Corps organizations to which they pertain.

The allowance of *personnel* is liberal, and the number of medical officers comparatively large, but consideration must be given to service contingencies, such as details, absence on leave, sickness, etc., etc., which will certainly materially reduce the number present for duty.

It will be observed that I have provided for a sanitary department complete in itself, every part of which is entirely independent of details from the combatant force, except in emergency, and all of which is under the immediate control of medical officers.

The system of details from the line, upon which was based the organization of our Ambulance Corps during the civil war, and which, so far as regimental aid is concerned, exists to-day in some of the European armies, is defective in that it fails to furnish the medical department with properly trained sanitary soldiers,

in fact with any but *emergency* men. And at the same time it by so many men as are thus detailed, diminishes the fighting effective of an army.

Daily and extra duty details are the bane of our army to-day, and will continue to be until special corps are organized for the special work which always attaches to an army in peace and war. When this is done the fighting force will become in fact what it is now to a considerable extent, only in name.

I have invited your attention to a bare statement of facts and figures as to the requirements in men and transportation of what may be called battle field sanitation. I have scarcely mentioned equipment, training, duties, the thousand and one things essential to a successful working of such an organization as has been outlined. I have not considered the subject of communicating and base hospitals or numerous other important details which go to make up the whole scheme of military sanitary organization, but what has been said may serve to call your attention to the most important question a medical officer has to consider — *organization.*

From the foregoing it will be seen that the medical officer has duties far beyond the scope of his profession, important and essential as are his professional duties. He is not alone a surgeon, but a military sanitarian. So far as human responsibility can extend he is responsible for the physical well-being of the command to which he is attached; responsible that knowledge, experience, and well directed effort shall do all that is possible to avert disease, far deadlier than the bullet — responsible for the proper care of those who notwithstanding such efforts are taken sick; responsible that the wounded receive early succor and removal from the battle-field, responsible that they are taken to a place of safety where by constant care and watchfulness they may be brought back to health and strength.

Our part is not in the pomp and circumstance of glorious war, but in its results, sickness and suffering, and our reward is in the amelioration of those inevitable accompaniments of that which, though glorious indeed, is none the less grim-visaged and cruel.

It has been said that the medical officer is a non-combatant

and therefore, to the thoughtless, not exposed to the dangers and chances of war. How far this is from the truth is shown by the statistics of every conflict.

Of the medical officers of the Union Army during the War of Secession forty-one were killed, eighty-three wounded, of whom ten died, four died in prison, and 281 of disease incident to active service.

Startling as is this record it simply emphasizes that of other wars. During the campaign 1813–1815, there were 2,170 medical officers in the Prussian army of whom about ten per cent were either killed or wounded, being in about equal proportion to the casualties among combatant officers.

In the French campaign against Constantine, 1837, while every thirteenth combatant officer was killed every sixth medical officer died.

During the Crimean war the mortality among the medical officers was according to French official statistics $18\frac{2}{10}$ per cent. and among the line officers $7\frac{3}{10}$ per cent.

In the Turco-Russian war 355 Russian medical officers out of a total of 2,839 died, being a mortality of 12 1-2 per cent.

In the French invasion of Mexico 20 per cent. of the medical officers died, and but 4 per cent. of the combatant officers.

The only army of which we have record in which the proportion of deaths among line officers exceeded that of medical officers, was the German army in the Franco-Prusian war 1870–71.

The army exists simply to meet a probability — war — and so long as the human animal retains his present characteristics that probability ever threatens to become an actuality. When it does, — then may we realize the beneficent results of our work in preparing for its coming.

TABLE

OF ALLOWANCE OF TENTAGE, WHEELED-EQUIPMENT, TRANSPORTATION AND ANIMALS FOR SANITARY ORGANIZATIONS IN THE FIELD.

(The purveying department has not here been considered, as, strictly speaking, it does not belong to the 1st line of sanitary assistance.)

ORGANIZATIONS.	Wall Tents.	Conical Wall Tents.	Common Tents.	Hospital Tents.	Ambulances.	Escort Wagons.	Army Wagons.	Medicine Wagons.	Kitchen Wagons.	Water Carts.	Field Forges.	Horses.	Mules.
Battery of Artillery, 1 Medical officer, 1 Orderly, H. C.	2	....	....	....	....	....	....	....	....	....	....	2	....
Battalion (200 to 400 str'ngth) 1 Medical officer, 1 Non-com. " H. C. 4 Privates, H. C.	1	3	1	1	....	1	....	....	....	....	....	3	4
*Regiment of Infantry (400 to 1,000 strength), 3 Medical officers, 2 Non-com. " H. C. 8 Privates, H. C.	3	3	1	2	....	..	1	....	....	....	....	7	6
Bearer Company, H. C., 3 Medical officers, 12 Non-com. " H. C., 1 Bugler, H. C., 47 Privates, H. C.	3	8	1	1	....	...	2	1	....	1	....	12	12
Ambulance Company, H. C., 3 Medical officers, 12 Non-com. " H. C., 1 Bugler, H. C., 1 Artificer, H. C., 1 Saddler, H. C., 2 Blacksmiths, H. C., 55 Privates, H. C.	3	10	1	....	50	....	2	....	....	....	1	124	12
† Divisional Field Hospital, 3 Medical officers, 12 Non-com. " H. C., 28 Privates, H. C., and accommodations for 500 patients.	3	4	4	40	....	....	4	1	1	1	....	12	30
Brigade Staff, 1 Chief M. O. 1 Non-com. officer, H.C., 1 Orderly, H. C.	1	1	....	....	....	....	....	....	....	....	....	3	....
Division Staff, 1 Med. Dir. 1 Non-com. officer, H.C., 1 Orderly, H. C.	1	1	....	....	....	....	....	....	....	....	....	3	....

* For a regiment of Cavalry the H. C. Detachment shall be mounted, in other respects the allowance is the same as for an Infantry regiment.

† It is possible that the number of privates, H. C., attached to field (divisional) hospital will have to be increased, as well as the number of army wagons.

Ft. Riley, Kansas, February 8th, 1892.

Maj. Lawrence C. Carr, Surgeon Ohio N. G., was next called upon and read a paper entitled "Some Needs of Our National Guard."

SOME NEEDS OF OUR NATIONAL GUARD.

BY LAWRENCE C. CARR,

Major and Surgeon Ohio N. G.

Mr. Chairman and Gentlemen: The enthusiastic interest exhibited by the National Guard Surgeons, gathered from the four quarters of this great country, at the birth of this organization in Chicago last year, was a prophecy of the work they would accomplish during the year, the fruits of which to present to this society.

Therefore I have had the presumption to foist upon this Association under an ambiguous title a paper in no sense medical.

At present we are the only National organization of the civilian soldier.

And as medical officers we must feel an interest as well as pride, not only in our individual regiment and State, but also in the National Guard as a whole. We should be willing and eager to lend our earnest support to place it upon a much higher plane.

Our efforts in this direction will command respectful attention and materially aid in ultimate suceess.

The haphazard and spasmodic attempts of separate States may now and then succeed in securing a sop of needed legislation, and partially assist State troops. It is only by harmonious and concerted action that we can hope to obtain speedy results, beneficial to all in an equal degree.*

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* After this paper was written I find the following in the *Army and Navy Journal*, April 30, 1892:

THE STATE TROOPS.

CONGRESSIONAL LEGISLATION FOR THE NATIONAL GUARD.

The bill to promote the efficiency of the militia, introduced by Gen. Cutting, which has been reported in the House of Representatives, has been considerably changed since it was first introduced. Gen. Cutting has ascertained, as the *Journal* has intimated in its columns, that the temper of Congress is such that it is out of the question to expect any

The National Guard has grown to its present strength, 106,000 men, in the face of positive hindrances. It has attained its splendid discipline in spite of the scoffer. It has bettered its morale, without external aid or approbation, and during the last quarter of a century has answered promptly over two hundred calls from the several States, and spilled its blood in defense of

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increase in the appropriation. He has, therefore, left the item in the bill as fixed by the existing laws ($600,000) and confined himself to making changes in the existing law. The most important of these changes is that the amount of the appropriation for furnishing stores and supplies is to be apportioned by the Secretary of War pro rata among the different States and Territories, not according to population, but according to the number of active uniformed National Guard, which shall appear for muster during March 1 and April 30, in each year, and the Secretary of War is authorized to detail army officers to verify the presence of the men. The bill as originally reported provided that the allotment shall only be made upon the certificate of such army officers. This created so much dissatisfaction, however, that the clause was inserted providing that the number present might be ascertained in other ways satisfactory to the Secretary of War.

The bill further provides that on the application of the Governor of any State or Territory, the Secretary of War may detail one or more officers to act as instructors of the National Guard of such State or Territory, which detail may be revoked upon the request of the Governor or at the pleasure of the Secretary of War.

The innovation requiring the allotment to be made according to the number of men appearing in each State for inspection is one on which there is a great diversion of sentiment. It is favored by those States having a strong and well-organized National Guard and opposed by those who are trying to build up one, and who need the aid of the United States for that purpose. For this reason it has been heretofore defeated in the conventions of the National Guard Association. The clause providing for an inspection which shall take place during the months of March and April in each year will meet with criticism from those of the States where inspections are held at other times, as is the case with New York. The bill framed by the last convention of the National Guard Association has been introduced in the Senate by Gen. Hawley and will undoubtedly pass that body. But whether the difference between the two bills will result in a compromise or in the prevention of any legislation whatever, it is difficult at the present time to foresee. It would be unfortunate if this should be the case. While the Hawley bill is undoubtedly the best, either of them would be a decided improvement upon the existing legislation, or want of legislation.

life, order and property, for those who niggardly gave it the scantiest support.

Pennsylvania kept 9,453 men under arms from July 19 until Nov. 15 at a cost to the State of $710,000, saving to the Commonwealth 1,000 times as much.

The day for ridiculing the citizen soldier has passed, never to return.

Is there a lack of harmony between the different State organizations such as to impair the usefulness of the Guard as a whole, in case of a hasty mobilization?

Let us examine some figures, compiled Sept. 1st, 1891, by the House Committee on the militia, from which the following deductions are made:

	No. of Men.	U. S. Appropriation.	State Appropriation.
Arkansas	2,958	$9,214	.....
Louisiana	1,152	7,371	$12,000
Mississippi	1,712	8,292	.....
Missouri	2,387	14,742	.....
Nevada	575	2,764	8,200
Virginia	2,844	11,057	10,000
West Virginia	728	5,525	10,000

The above States make no provision for an encampment of their troops. Arkansas, Mississippi, Missouri, Idaho and Wyoming make no State appropriation for support of troops.

The following States make no provision for pay of troops, should they wish to encamp:

	Number of Men.	U. S. Appropriation.	State Appropriation.
Alabama	2,958	$9,214	$20,300
Delaware	501	2,764	3,000
District of Columbia	.....	.....	.....
Indiana	2,450	13,821	37,000
Kentucky	1,310	11,978	10,000
North Carolina	1,586	10,135	13,000
South Carolina	5,616	8,292	10,000
Tennessee	1,357	11,057	2,000
Texas	3,368	11,978	10,000

In four States, whether the troops shall go into camp or no, is entirely optional with the Governor.

Such statistics are well worth a careful study..

Our government has done but little in the past to aid or encourage the National Guard.*

Yet we are subject at all times, even as individual commands, to the call of the President, who can issue such orders independently of State Governors or regimental commanders.

Here is the *law:* "That whenever the United States are invaded, or are in imminent danger of invasion, from any foreign nation or Indian tribe, or of rebellion against the authority of the government of the United States, it shall be lawful for the President to call forth such number of the militia of the State or States most convenient to the place of danger or scene of action, as he may deem necessary to repel such invasion or to repress such rebellion, and to issue his orders for that purpose to such officers of the militia as he may think proper."

In the face of this law, bear in mind that the $400,000 appropriated by Congress, while apparently not distributed equally, in point of fact is not distributed at all, only *loaned* to the different States subject to recall by the President at any time. And yet our general government, which can call upon New York's 13,539 splendidly equipped men, loans them $2.52½ of arms per man.

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* I quote from the Hon. Mr. Cutting, March 17, 1892:

To the student of National affairs the desirability of legislative action on the part of the Congress of the United States must be apparent. In no respect are the laws of the United States of America more generally disregarded, than in connection with the laws bearing upon the militia. It is entirely within bounds to assert that ninety-nine out of every hundred of the male population of the United States between the ages of eighteen and forty-five, are ignorantly violating the provisions of the existing law.

This law, enacted in 1792, has undergone no material change. Onerous in details and utterly impracticable, were serious attempts made to enforce it, there would be universal protest against its continuance on the statute books of the Nation. Its provisions, now obsolete, have never been seriously carried out; and every President from George Washington to the present occupant of the executive chair, has, either personally or through the Secretary of War, urged that its defects be remedied. Yet no change has been made in a century.

While Wyoming, who could furnish but 300, in all probability poorly drilled men, receives $9.21½ per man.

There is much food for thought here. I am not now entering into the question, as to whether the general government does enough for the National Guard, but only raising the issue, that she should be more impartial in dispensing what little favors she grants, if she wishes to preserve harmony between the Guards in different States.

The manner in which the Guard of the District of Columbia is supported, I could not learn. They are in possession of 840 rifles, 112 carbines and 73 revolvers, and probably number over 1,000 men.

Let us turn for a moment to a more hopeful statement than the one just presented, namely, State care of troops.

Look at the standing of Massachusetts, with 5,511 men, annually appropiating $244,630 for their care, — no wonder she has good soldiers.

While the proud State from which I hail only lacks 150 of having the same number of men. Yet 'tis almost a personal fight to get the $85,000 she gives us, and still she thinks she should have the best soldiers in the world. Is it any wonder that every man in Ohio expects to be President, so as to prove to the country how cheaply he can run an army.

	Number of of Men.	State Apropriation.	Pro Ratio.	
			Per Man.	Standing by Number.
California	4,218	$156,573	$37 12	4
Connecticut	2,687	117,000	43 55	2
Illinois	4,389	132,500	30 19	7
Indiana	2,450	37,000	15 10	16
Iowa	2,443	35,000	14 30	17
Kansas	1,738	22,350	12 85	18
Maine	1,114	20,000	17 95	14
Maryland	2,094	40,000	19 10	12
Massachusetts	5,511	244,630	44 30	1
Michigan	2,515	73,286	29 10	8
Minnesota	1,838	40,000	22 30	10
Nebraska	1,073	12,500	11 60	19
New Hampshire	1,229	30,000	24 40	9
New Jersey	4,233	148,516	35 08	6
New York	13,530	400,000	19 05	13
N. Dakota	513	11,000	21 24	11
Ohio	5,373	87,400	16 26	15
Pennsylvania	8,460	300,000	35 46	5
Vermont	786	3,000	38 20	3

The time, manner and style of encampment present great differences in the several States.

Some are annual, some every two years, some every three years,— the time varies from four days to three weeks.

The arms loaned by the general government differ both as to make and caliber.

After two months of inquiry, the I. R. P. department of our regiment sent me the following communication:

CINCINNATI, April 30, 1892.

Maj. L. C. Carr, Surgeon, First Reg't Inf., O. N. G.:

SIR — Acting upon the suggestion of Capt. Adolph Gieger, I. R. P., I have communicated with the Adjutant-Generals of all the States in the Union, as you requested, and have the honor to submit the following report: The National Guard of Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Minneapolis, Missouri, Michigan, New Jersey, Nevada, Ohio, New Hampshire, Nebraska, Pennsylvania, South Dakota, Vermont, Wisconsin, Texas, use the Springfield rifle, 45 caliber.

Connecticut also used the Peabody rifle, 45 caliber. New York uses the Remington rifle, 50 caliber, and one-third of the Iowa Guard uses the Springfield rifle, 50 caliber.

I am, Sir, very respectfully,

Your obedient servant

PETER GIBSON,

Lieut. and Asst. I. R. P.

Fourteen States paid no attention to repeated *military* communications — I have no doubt but what old pattern Sharpe and Winchesters are to be found in the States not reported.

The disparity and disagreement between different State troops on a hasty mobilization, can scarcely be realized.

Under the existing circumstances, is it possible for the National

Guard of this country, to be raised to a higher yet equal standard? *

The large majority of the States are in accord with their State troops. We are in touch with our people, who are ready to aid, but they wish definite knowledge of what we need and why we need it. They allow the actions, or I should have said want of action, on the part of Congress to govern them in this matter.

The old Arkansas residenter did not mend his leaking roof while it was raining, because there were some parts of the house in which he could keep out of the wet; he did not mend it in fair weather because it did not leak.

Whenever the National Guard question comes to the surface in Congress this is the logic applied to it, so it has been in the past, and from present indications Congress is still using this logic.

Here are some figures of what civilized nations who are not

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* From Adjt.-Gen. Kelton to House Committee and extract:

Our 100,000 patriotic National Guard protectors are obliged to ask our citizens and State legislatures for $2,000,000 each year to maintain them as military organizations. The $400,000 the General Government appropriates for their equipment, less than $4 for each man, not being sufficient to buy enough ammunition to make them good shots.

The Armory, which needs and must have the assistance of the National Guard in any sudden emergency, begs Congress to hasten to assist State legislatures to disembarrass the State volunteers of this condition of affairs by legalizing this force as a national force and by appropriating for its maintenance in the aggregate $1,500,000 a year, to be increased should this sum be found too small, in order to properly equip and discipline a United States National Guard of 150,000 men.

I beg to say this much in anticipation of the demand for information the committee may desire of me. I fully support this bill to secure the aid of the National Guard by the General Government. The bill proposes nothing to the National Guard that they may not accord, and asks nothing of the General Government it should not cordially give. The National Guard seeks to be as important to the Government as to the State; to enlarge its usefulness; to have an object for its patriotic efforts and duties which is as much more important as all the States are more important than any one. The General Government needs at once the National Guard to lean upon and to strengthen it as to rely upon its ever-ready help with infinite confidence; to encourage and discipline it as to become a most important training school for the youth of the whole country as well in time of peace as of war.

continually at war, are paying for the privilege of maintaining peace. For their soldiers they pay annually per man —

Russia	$125 00
Austria	190 00
Germany	210 00
France	242 00
England	371 00
United States Regular Army	1,000 00
United States National Guard	3 63

That there may be a call for the National Guard at any time is more than possible. The Chilian difficulty, the Behring Sea controversy, indicate that there are some people in the world who do not think that we are the greatest nation on earth, from a military standpoint. Every school-boy is familiar, from reports in our daily press, with England's contemplated improvements in the St. Lawrence canals. Perhaps it is for commercial interests solely. But examine your maps and see its possibilities, — with this improvement completed, England could put 120,000 trained troops over our border in forty days. If she would only hold them there until we could get ready, we would place millions of men in the field to stop her progress, but unfortunately history shows that it has not been her custom to wait, the time needed would have to be fought for, by the 24,000 regular troops, assisted by the 106,000 National Guard, unprepared as the latter are.

Still should the call come, we know they would go; 'tis true many valuable young lives would be lost through lack of drill and discipline, from the attempt to mix this unharmonious mass — as well as from lack of proper experience. But if they be lost, what boots it? Our government may consider it the cheaper way to learn her lesson — she has learned some costly ones, perhaps she may have more to learn.

A protest and not a plea should be entered against this probable injustice, which may send to the front our 106,000 brave and willing hearts, to cope with even half the number of those trained to war — spend some money and put this young army in a condition to protect *itself*, when the need comes to defend its country.

The following pithy paragraph from Lieut. Batchelor's excellent article in the *Military Service Journal*, January, 1892, well

expresses this idea. He says: "If untrained valor were the only requisite for military success, the desperate fanatics of Abu Klea would not have left an Englishman alive, and the 400,000 patriotic French levies, fighting for all that man holds dear, would not have surrendered their beautiful Paris to less than half their number of trained German troops.

"We are over-confident."

I differ with the last phrase; over-confident does not express it. We are grossly negligent.

Can the status of the National Guard be elevated without too much friction?

The general government could appropriate $10,000 and issue instructions to the senior colonel * and one medical officer of each State to prepare themselves by a study of the laws and code of their several States to procure opinions from officers within their own States, and to report on such a day to such a place, to hold conference with brother officers from every State. The Adjutant-Generals digested this opinion. Many of them while excellent gentlemen are chosen for political reasons, remaining in office but two years, and as unfamiliar with the needs, as with the details of the Guard, in whom their interest is spasmodic.

There the effort to be made to adopt the U. S. Army regulations for all States, to have their State laws uniform throughout the country, this report to be a unanimous one to the general government, and to further report to the general government what the Guard reasonably expects from them.

In this way can the digested opinion of the National Guard as a whole be reached. An action of this kind would meet with the hearty approval of all States; if even part of the suggestions of such a conference were carried out much good would accrue. The Guard would be on an equal footing throughout the Union in their several districts be their numbers large or small.

This convention could recommend tri-State encampments, changing the State at every encampment, so that in a short time

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* The substituted bill differs but very little from the original, and as amended has the approval of the Secretary of War, and is the digested opinion of the National Guard throughout the Union. The proposed substitute is but little improvement on the bill of 1792.—*Extract from Mr. Cutting's Report.*

each State's influence would permeate every other State, causing friendly rivalry and incentive to excel, each one the other, thus working much good.

There would be an inducement for the better class of our young men to join the Guard; in very few States are there any inducements now.

A State Examining Board for officers (also a Medical Board of Examiners for Surgeons). Then something more than an election would be necessary to secure a commission; a man could not be commissioned as Major in one State, who could not pass an examination for Second Lieutenant in another * with only a few of its needs satisfied. The National Guard would be a bulwark for the Nation, and it would be considered a high honor to be permitted to wear the blue.

EXAMINATION OF LT.-COL. A. L. WHITNEY FOR ALL LIEUTENANTS.

DEC. 30, 1891.

1. What is a wheel? How many kinds are there? Name them.
2. What is the radius of a circle described by the pivot man in the wheel of a subdivision?
3. Give the posts of officers, sergeants and field music in the formation of a Company.
4. Marching in line, give the commands and explain movements to pass obstacle.
5. How should officers aim to impress their men in instructions for skirmishes?
6. What distance should the reserve be in rear of the company skirmishers and what movements should they execute?
7. Give the commands and explain the movement to give the battalion a general alignment.
8. The battalion marching in column of fours right in front and a part of it having changed direction to the right, give command and explain movement to form line to the left.
9. What ceremonies precede the muster of a battalion.
10. For what purpose are escorts of honor detailed.

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* I here submit a written examination, for a 2nd Lieut., questions and answers copied from record book of the Examining Board 1st Inf. O. N. G., Dec. 30, 1891; 70 per cent. was required. This examination is submitted as a sample of the effort being made in our State to improve the quality of National Guard officers.

ANSWERS.

I. A wheel is a circular movement, whereby the front is changed 90°. There are two kinds of wheelings — on fixed and movable pivots.

II. The radius of the circle described by the pivot man is equal to about one-half the front of the subdivision.

III. Captain 2 yards in front of the center of his company, 1st Lieutenant two yards in the rear of the center of the first platoon, 2nd Lieutenant, two yards in rear of the center of 2nd platoon, 1st Sergeant on the right of the company, 2nd Sergeant on the left of the company, both in the front rank, 3rd Sergeant, two yards in the rear of the second file from the right, 4th Sergeant 2 yards in the rear of the 4th file from the left, 5th Sergeant 2 yards in rear of the center of the company, musician 2 yards in rear between 1st Lieutenant and 5th Sergeant.

IV. Right (or left) forward, fours right (or left), so many fours from right (or left), to rear march. To reform, Left (or right) front into line, double time, march.

V. With their own individuality.

VI. The reserve is 150 yards in rear and should conform to all movements made by the skirmishers.

VII. Color and general guides on the line, guides on the line. On the center dress. Captains rectify the alignment.

VIII. Fours left, rear companies, left front into line, march.

IX. The review. Companies right wheel, march. Pass in review. Forward guide right, march.

X. To show respect to the following: President of the United States, Cabinet, Senators, Governors, Foreign Envoys, etc., General Officers of the Army and Navy, and funeral escorts.

HARRY B. REYNOLDS,
2nd Lieutenant Comdg Co. I.

EXAMINATION OF MAJ. DAY.

1. Describe the flag of the United States and state what are represented by the stars and stripes.
2. By what authority are dishonorable discharges issued?
3. Who are authorized to make enlistments and swear in recruits?
4. Who appoints the non-commissioned officers of a company?
5. When a party of officers has been halted by a sentinel or doorkeeper which of them shall advance and procure passage for the party?
6. What ornaments, not a part of his uniform, is a soldier allowed to wear?
7. Into how many reliefs is a guard divided?

8. Write a sentence of not less than fifteen nor more than forty words, using the words "coal, rain, outrage, blessing."

Rewrite and correct errors in grammar in the following sentences.

9. Every one on the train were shaken up and none were hurt.

10. Who is there? demanded Jones. "It is me," replied Smith, whereupon the door was opened.

ANSWERS.

I. The flag of the United States consists of thirteen stripes — seven red and six white, representing the thirteen original States, and forty-four stars in a blue field, left upper corner, representing States now in Union.

II. By court-martial.

III. Commanding officer of company, troop or battery.

IV. Commanding officer of company, troop or battery.

V. The junior officer.

VI. Service medals, loyal legion and Grand Army and marksmanship badges.

VII. Into three reliefs.

VIII. It is an *outrage* instead of a *blessing*, said he, to pay so much for *coal*, for if I had waited for this *rain* it would have been cheaper.

IX. Every one on the train was shaken up, and no one was hurt.

X. Who is there? demanded Jones. It is I, replied Smith, whereupon the door was opened.

HARRY B. REYNOLDS,
2nd Lieut. Comdg Co. I.

EXAMINATION OF MAJ. CARR FOR ALL LIEUTENANTS.

I. What is a triangle, a square and a cube?

II. If a man take a 28-inch step, how many steps will he take to cover 100 yards?

III. What is the difference between 4 square miles and 4 miles square?

IV. How many States were in the Republic when Washington was elected president?

V. What wars in which the U. S. took part occurred between the war of 1812 and the rebellion?

VI. What do you know of John Brown?

VII. How many cities of over 100,000 population on the Ohio river between Cincinnati and Cairo — name them?

VIII. Why is Columbus the capital of Ohio?

IX. What is the meaning of plurality?

X. Who was John Morgan, and what did he do?

ANSWERS.

I. A triangle is a figure having the angles and bounded by three lines.

A square is a figure bounded by four lines of equal length and having four right angles.

A solid body having six sides and the angles equal.

II. 128$\frac{4}{7}$ steps.

III. Four square miles is 4 miles long and 1 mile wide.

Four miles square is 4 miles long and 4 miles wide, or 16 square miles.

IV. 13.

V. Mexican — Indian wars.

VI. John Brown was a fanatic on the question of slavery and religion about the time of the civil war. He took up arms against the authority of the United States and was executed.

VII. One — Louisville, Ky.

VIII. Made so by the Constitution, which was probably based on its central location.

IX. Plurality is the excess of one quantity or number over the next higher in more than two quantities or numbers.

X. John Morgan was the leader of a band of rebel guerrillas, who raided Kentucky and southern part of Ohio during the war.

HARRY B. REYNOLDS,
2nd Lieut. Comdg Co. I.

COL. CHARLES R. GREENLEAF: I have had considerable experience with military men and the National Guard, but that paper hits the nail on the head, and I wish that this Association would publish it and spread it broadcast throughout this land, so that everybody could read it.

A vote of thanks was extended to Maj. Carr for his most excellent paper, whereupon a motion prevailed that the paper be published and distributed; also that the matter be brought before a committee of two to be appointed by the chair with full power to act.

Adopted.

Gen. Senn appointed Col. Chancellor and Col. Burrell to carry above motion into effect.

An adjournment was then taken until 9 o'clock Wednesday morning, at the City Hospital, where the courtesies of that institution had been extended to the members of the Association by the Board of Health.

WEDNESDAY, APRIL 20TH — SECOND DAY.

Met pursuant to adjournment on the 20th day of April, 1892, when a very interesting clinic was conducted by Surgeon-Gen. Nicholas Senn. The first subject being "Resection of the Knee Joint." After the patient was placed on the operating table and put under the influence of an anæsthetic, Gen. Senn, after some preliminary remarks, said: —

Gentlemen of the Association of Military Surgeons of the National Guard of the United States:

I show you here a case that presents all the characteristic features of tumor-albus, white swelling, with the typical spindle-shaped enlargement of the joint, the largest diameter corresponding exactly to the line of the joint and tapering gradually towards both sides. The swelling here (indicating the point) can be directly traced, not to an effusion into the joint, but to the presence of masses of granulation tissue, as the catarrhal stage of inflammation has subsided long ago, either in consequence of the treatment employed or spontaneously. A catarrhal synovitis is very often the first indication of the existence of tubercular inflammation of the synovial membrane, but often, if left to nature's resources, it gradually disappears and the swelling which assumes a different aspect is then no longer due to an effusion into the joint, but to a thickening of the synovial membrane and the capsule of the joint.

I am told when these incisions were made into the joint, conditions were found that corroborate the diagnosis that I have ventured. I can show you now, if the patient is thoroughly relaxed by the anæsthetic, that the affection has given rise to serious textural changes of the joint; that the tubercular inflammation no longer is limited to the synovial membrane, but has already attacked the deeper structures of the joint, resulting in a weakening of the capsule, so that now, when the patient makes an attempt to walk,

the knee joint bends under the weight of the body, rendering locomotion exceedingly difficult, and the following of his occupation, impossible. I find on examination that the patella rests directly upon the condyles of the femur, that there is but moderate fluctuation in the upper recess of the synovial sac which is always a characteristic feature, either in cases of copious effusion into the joint, or the existence of immense masses of granulation tissue filling this portion of the synovial sac. You notice that the lateral movements are very well marked, showing a decided elongation, and a weakening of the capsule of the joint. I find here, over the outer and inner aspect of the patella, a condition that might be mistaken for a slight effusion into the joint, a puffiness, which extends past the normal depression on each side of the patella, a swelling that presents on palpation, a sensation of fluctuation. It is not a true fluctuation, it is simply a sensation imparted to the finger by a mass of granulation tissue within the joint, a *pseudo* fluctuation, that so often gives rise to serious mistakes, not only in diagnosis, but in treatment. I believe that the most expedient and most conservative treatment that we can suggest in this case is the removal of the diseased synovial membrane, and if necessary, the capsule of the joint. Although the patient is fifty years of age I feel that I am justified in making a conservative effort in saving his limb. At the same time, I wish to choose an operation which will remove all the diseased tissue. I propose to make, in this case, an arthrectomy or resection of the joint.

Arthrectomy was devised by Volkmann, and recommended by him in all cases in which the synovial membrane is either primarily or secondarily involved in the tubercular process, and where the pathological lesions in the extremities of the bones, are such that a typical resection can be avoided. It is becoming more and more the favorite operation, to limit our efforts to the removal only of diseased tissue, and save as much as possible of the other joint structures, hence, I think in the treatment of tubercular joints, the operation now almost invariably selected, where the disease is not very extensive, is either arthrectomy or atypical resection. I am quite confident, that in this case the disease does not seriously implicate the articular

ends of the bones involved in the formation of the knee joint. The first thing that we do is, to mechanically empty the blood vessels of the affected limb, not by an elastic bandage, because I would be fearful that by making an elastic compression from the periphery of the extremity up to the diseased joint and beyond it, that with this means of rendering it bloodless, it might become the direct cause of the dissemination of the tubercular process. The mechanical compression may result in furthering the work of the disease in the joint, and force the tubercular process into the circulation, hence it might become the direct source of a general or a disseminated tuberculosis. I believe that the elastic compression of the extremities is not only superfluous, but exceedingly dangerous. All that is necessary is simply to elevate the limb and keep it in this position for a few minutes. Lister's experiments on the lower animals show, that even in a large animal like the horse, by elevating the limb you can cut the tibial artery without much hemorrhage occurring. We have drained the limb of the venous blood by elevating the limb, we have diminished the arterial force of the circulation by the same means and are now ready to at once cut off the circulation of the limb to be operated upon by the elastic constrictor. I wish to call your attention incidentally to this means of preventing hemorrhage, that even elastic constriction must be practiced carefully in order to prevent remote, and often serious, consequences. It has happened to me on two occasions, perhaps, by my own carelessness, in resorting to this simple surgical measure, that I have produced in one instance paralysis of the musculo-spiral nerve, that gave me great anxiety for three or four months, and in a second case, in operating upon the leg, making constriction immediately above the knee joint, paralysis of the peroneal nerve followed, from which the patient has, even now, not fully recovered. I therefore insist that in using the elastic constrictor, it should be applied invariably at a point at which the principal nerves of the extremity are safely protected by a cushion of muscular tissue. (Constrictor applied.) Never apply the elastic constrictor, if you can avoid it, for instance, to the part where the musculo-spiral nerve passes almost sub-cutaneously

over the shaft of the humerus; when this has to be done on account of the location of the disease, interpose between the constrictor and limb a thick layer of gauze. The next thing to avoid is linear compression of the deep important structures. I am very sorry indeed that I have now an elastic constrictor that is not very well adapted to avoid linear compression. I should much prefer to use a bandage instead of a tube, to make the compression as diffuse as possible. An elastic constrictor should be at least an inch or an inch and a half in width. We will use in this case the ordinary elastic roller. (The constrictor broke, whilst the doctor was making the constriction.) The constrictor has lost its intrinsic elasticity, I therefore shall have to use a rubber tube, but I will apply the tube in such a manner as to diffuse the compression as widely as possible. Apply the tube at several points in this manner (indicating), so as to obtain a wide surface pressure. One other matter to be considered in applying an elastic constrictor, is, to make the compression suddenly, so as to interrupt the circulation at once. A slight application of pressure, or a slow application results in venous stasis. I believe that we have a comparatively bloodless condition of the limb in this case, and are now ready to proceed with the operation. One of three incisions is usually selected now, in making a typical arthrectomy or an atypical resection. There are few surgeons who make the old horseshoe incision with the convexity of the flap directed downwards. There are two serious objections to this incision. The resulting scar of such a resection wound, falls in a place where it is later most exposed to injury. Volkmann's trans-patellar incision is an improvement upon the old incision, but is again open to objections, because the lines of the incision of the soft parts and the sawn surfaces of the patella correspond. The result is an adherent scar, sealing the soft tissues to the anterior surface of the patella, hence, I select the semi-lunar incision, with the convexity not directed downwards, but upwards, making the trans-patellar section in the same manner as Volkmann, thus we have a large flap, which, after suturing, renders the line of the suturing of the patella sub-cutaneous.

Incidentally, before we make the incision, I will call your attention to these three scars that I have pointed out to you

before; they are characteristic tubercular scars, scars that are even now manifest, long after the operation was made, still remain exceedingly vascular, scars showing only too plainly that the primary cause of the joint affection has reached the scar tissue, interfering with the normal avascularization of scar tissue. In some cases, where there is some doubt about the nature of the primary affection, the condition of the scar will often lead you in the right direction, in making a correct diagnosis. I will now commence the incision over the inner aspect of the knee joint, exactly over the most prominent point of the internal condyle, and extend it in a gentle curve from this point to about an inch above the upper border of the patella. I select as my landmark for the termination of the external incision, the most prominent portion of the external condyle, and carry the incision in a second gentle curve across the swollen synovial sac, near its upper recess carrying it again downwards, terminating it on the opposite side of the knee at about the same level. I have now completed the semi-lunar incision with the convexity of the flap directed upward. Its upper border reaches about an inch above the upper margin of the patella. I now reflect this flap, turn it downwards, being careful to take with it the other tissues down to the deep aponeurosis so as to preserve as many of the sub-cutaneous blood vessels as possible. I will separate the flap downwards to a point just below the lower border of the patella, exposing the patella. I am ready to make a trans-patellar incision, dividing first the soft tissues on either side. I saw through the patella transversely, about the middle. I now divide the ligaments of the knee joint on each side, and am ready to give the joint a very careful inspection in order to make a positive pathological diagnosis. You now look into a typical tubercular joint, with very slight affection of the articular ends of the bones, but quite an extensive destruction of the articular cartilage. Our diagnosis has therefore been corroborated by direct inspection of the joint. I must now make two additional incisions one on each side of the upper fragment of the patella, in order to expose fully the upper recess of the joint, to enable me to remove the diseased capsule, thoroughly. Notice how much the capsule of the joint has become thickened, the disease, as I predicted, is no

longer limited to the synovial membrane, it has extended to the capsule, which accounts for the preternatural mobility of the knee joint laterally, as we ascertained before the operation. I must, therefore, make a typical arthrectomy of the soft structures of the joint, an operation which is always somewhat tedious, but which, in order to be successful, must be thorough. As the patella presents no evidence of disease, I believe it is safe to leave this structure, and limit our operation to the soft tissues of the joint. You notice a most interesting pathological condition at this point, a mass of cicatricial tissue which seals down the anterior wall of the synovial sac to the posterior; it is an intra-articular scar, presenting an unmistakable evidence of the recuperative power of nature's resources, an attempt not only in the arrest of the disease, but even a well marked indication of a curative process. Tubercular joints occasionally will get well spontaneously, but only too often, the best result that can be expected, as you well know, is either a partial or complete ankylosis caused by such an intra-articular scar.

I now dissect out carefully the upper recess of the joint, which I can do very readily by lifting up this central flap that I have made. In making this dissection I am exceedingly careful to carry my incision as far as I can determine through healthy tissue. It is the clearing out of the upper recess of the synovial sac, that in the old operation with the convexity of the flap directed downwards, is so imperfectly done, and that accounts for the many local relapses after such operations. I show you here a typical tubercular capsule. Haste in this part of the operation should be made slow, as the removal of the capsule requires a tedious dissection. The prime indication in this part of the operation is, to remove all of the diseased tissue and to preserve as much as possible of the healthy structure of the joint. As we predicted, the capsule is very extensively diseased, making its complete removal a matter of necessity and not of choice. I reached this copious cushion, of what appears as healthy, para-articular fat. As I have no use for this structure, and as it may be the seat of an incipient infection, I have no hesitation in removing it with the diseased capsule. I wish to

clear the condyles of the femur thoroughly as though I were to make an anatomical preparation, hugging the bone very closely, as I remove the tissues from the intercondyloid notch and all around the condyles. We have now cleared out the upper recess of the synovial sac, very thoroughly, and are ready to attack the joint surface. I now proceed to remove the synovial membrane, and the diseased capsule over the outer aspect of the joint, and clearing at the same time the articular surface of the tibia, taking again the same precaution to hug the lower surface of the patella and to reach the remote corners of the joint. You notice that here between the condyles, what remains of the crucial ligament presents about the same appearance as the diseased capsule, necessitating the complete removal of this structure. It is here on the sides of the joint where I have to make the arthrectomy again very thorough. The capsule here again is thickened enormously. I have so far made no use of the sharp spoon. I am not making what English surgeons are pleased to call an erasion, I prefer to make a typical arthrectomy including the removal of the synovial membrane and the capsule. To make a typical arthrectomy, it is unsafe to allow any part of the lateral portion of the capsule to remain. I now reach a part of the joint, presenting the greatest difficulty in making an arthrectomy, the space behind the condyles and the head of the tibia. We will use the arm of one of our assistants as a fulcrum in the popliteal space, over which I will now bend the knee, so as to render this part of the joint more accessible. I am reaching now, as you all are aware, a dangerous neighborhood. The large blood vessels are always a bugbear to the operating surgeon, a hair's-breadth of tissue between them and the operation wound often will make a great difference as to the immediate and remote outcome of an operation. I remove every vestige of the crucial ligament and the posterior part of the capsule without endangering the popliteal vessels which I am very anxious to avoid. As I have removed the entire capsule very thoroughly, the best result that I can expect in this case will be ankylosis with the limb in a good position. The articular cartilage has been worn away, destroyed by the extension of the disease from the synovial membrane, to this structure. In clear-

ing the articular surfaces I have to abandon the use of the knife; I cannot dissect away the cartilage in the same manner that I dissected away the capsule of the joint, I do not wish to use the saw, as I promised you not to make an atypical resection, and yet, I must clear out of the joint all of the tubercular tissue; I will now make an erasion of the articular surface of the knee joint; I will scrape away the articular cartilage. Unfortunately the spoon I am working with is better adapted for scraping sinuses than to remove the articular surface of the femur and tibia. The instrument I prefer for this purpose is a large shallow spoon. I can do this part of the operation well with this spoon, but its use necessitates a little unnecessary loss of time. Never rely upon the spoon in removing a tubercular capsule, this part of the operation must be done with a more thorough instrument — the knife. I have not used as yet, as you have observed, another instrument that is so frequently used in this operation, scissors. I prefer the knife to the scissors, because I can with it make my incisions with more precision and thoroughness. I now wish to flush the joint with a strong aqueous solution of iodine, a solution that I invariably employ in operating on tubercular lesions. The effect of iodine on tubercle bacilli is a decided one, and can be relied upon much more than corrosive sublimate or carbolic acid in operations for tubercular lesions as both of these antiseptics have no decided antibacillary effect. At the same time, the iodine solution produces another effect on the tissues that is of great use in operating for tubercular lesions. It has a decidedly stimulating effect on the tissues exposed by the operation, initiating at once an active process of repair so useful in the prevention of a local recurrence. There are still remaining on the wound surfaces small fragments of tissue that may still harbor the essential cause of the disease that a stream of water will not remove. I wish to rub away with a small antiseptic compress, preferably iodoform gauze, the fragments of tissue entirely or partly detached, so as to supplement the means which we have resorted to in the mechanical removal of the diseased tissues, by this simple and yet exceedingly important measure. I now wish to iodoformize thoroughly the wound surfaces, by sprinkling them with iodoform; most of which of course will

again be removed by rubbing with the small compress of gauze. I wish to bring this valuable antibacillary agent in immediate contact with the tissues that have been so close to the infective process, adding to the mechanical measures a chemical means of destroying, or rendering harmless, all that still possibly might remain of the tubercular disease. We have now completed the arthrectomy. I now ask for a large compress with which to make surface pressure, in order to reduce to a minimum the amount of parenchymatous oozing, which will follow the removal of the elastic constrictor. I believe it is a mistake in theory and in practice, after operating on such a large joint, and so extensively as in this case, to rely upon suturing in arresting the hemorrhage. I will ask one of the assistants to remove the constrictor while I am making surface pressure. You are all aware that valuable as the elastic constriction is in the prevention of hemorrhage or its treatment, that the very means which we resort to in diminishing hemorrhage during an operation, unfortunately often gives rise to serious parenchymatous oozing after the removal of the constriction, on account of a temporary paretic condition of the capillary vessels caused by the constriction. It is a well-known clinical fact that parenchymatous oozing is much more marked and more difficult to manage after elastic constriction than by operating without taking this precaution. Compressing the surface for a few minutes, I resort to the best known measure to prevent this undue amount of parenchymatous oozing. I desire in this case, to obtain, if I can, perfect hemostasis, I wish to arrest the hemorrhage thoroughly and completely before I suture the operation wound. I hardly believe that it will become necessary to apply more than one or two ligatures, to some of the articular branches, as I have been careful not to injure any of the important blood vessels in the immediate surroundings of the knee joint, and while the assistants are now taking care of the bleeding points, I will utilize the time in drilling the fragments of the patella, in order to enable me to approximate the fragments by suturing. The only suture necessary to keep the parts in apposition until union by a bony callus takes place, is catgut. I am satisfied that any fracture of the patella can invariably be brought together, and success-

fully united, by relying on the catgut suture. I am exceedingly anxious in a case of this kind, that no foreign material shall be allowed to remain, because I am operating for a pathological condition, and any foreign substance being allowed to remain within the immediate vicinity of the knee joint, might become the means of lighting up a latent tubercular process at any time in the future. I therefore desire to use a suture that will be absorbed, after its presence has been made unnecessary. Evidently St. Louis favors the use of an artificial finger, the assistant here has handed me a needle threaded with a catgut suture in a needle holder. I simply wish to enter my protest against the use of this occasionally very useful instrument, wherever it can be avoided. I believe the best needle holder, and one that never is out of order, one that can be rendered aseptic, and should be asepticized before a wound is touched, is the hand. I wish to make a double suture, with one thread. I therefore have proceeded by passing the suture through the outer side of the patella. I now drill the second opening in the lower fragment, about an inch from the first. The assistant will now watch his chance to follow the perforation as I remove the drill. I make a small opening in the upper fragment, and I hope that we will not lose quite so much time. I have now a double suture of durable chromacised catgut in place, and I am ready to bring the sawn surfaces in accurate apposition by tying the suture.

In operating for tubercular affections of joints, it is exceedingly important to classify the cases according to the pathological conditions — pure tubercular affections, and tubercular affections complicated by secondary infection with pus microbes. I maintain that this classification is important, because in operating for mixed infections, with few exceptions, we fail in obtaining a union by primary intention. On the other hand, in operating for purely tubercular affections, we are brought face to face with a condition which, if we eradicate thoroughly, we can confidently expect what we should aim at, primary union of the wound throughout. I make this distinction simply to introduce my remarks on drainage in operation wounds made for tubercular lesions. If I had here a joint communicating with the outer

surface by means of suppurating fistulous tract, I should certainly feel that I should not do justice to the case, if I closed the wound throughout, because in all probability, I should be unable to remove the primary pathological conditions of both forms of infection. I believe, that in this case, even if tubercular tissue has remained, there is absolutely no indication for securing drainage. Open tubercular lesions are always more dangerous than sub-cutaneous lesions. The sooner, therefore, this wound heals, the better for the patient, it is therefore my intention to close the wound throughout, but to establish a drainage for a few days only, in order to avoid tension upon the flaps, by inserting a few strands of catgut at the lower angle of the wound a drain that will not necessitate an early removal of the dressing, which can never be accomplished without some disturbance of the wound surfaces, a drain that will be removed in the course of five or six days, after its presence is no longer desirable, after it has fulfilled its object. This drain will lead away from the wound surface into the absorbent antiseptic dressings the excessive primary wound secretion, which of course will place this wound in a condition of absolute rest, so much to be desired in operating upon tubercular patients, that invariably are not only suffering from this apparent direful pathological condition, but are tubercular patients in every sense that that word implies. We have now arrested the hemorrhage, as you notice, but I am anxious that the limb should be kept in an elevated position, in order to bring the blood vessels in the most favorable condition for the establishment of a collateral circulation, adequate to the requirements in this case. Now by drawing upon the ends of this double suture, you will notice how gradually the sawn surfaces are brought into approximation, no need of silver wire, no need of any other form of durable suture, the absorbable catgut suture here, will keep the parts in apposition, until its further use has been made unnecessary by the plastic process that will be initiated at once and terminate in bony union. We have now the patella in place, we have here a double bridge composed of absolutely healthy tissue, a bridge that will add strength to the weakened member at the site of operation, a bridge that will prevent the retraction of one of the

most important muscles of the lower extremity, the quadriceps extensor femoris muscle, a bridge that will add its part to the process of repair at the site of operation. We will now suture what remains of the capsule over the joint on each side, in other words, we are ready to close the deep wound with buried catgut sutures. I am ready now to close the deeper portion of the wound which embraces all that it was deemed safe to preserve of the deeper, para-articular structures. What I wish to call your special attention to, is the relative position of the external incision to the line of section of the patella, the first occupying a level about two inches higher than the other, hence the section through the patella is covered by the flap; it has been rendered sub-cutaneous by this method of making the incision. I have to entertain no fear that the skin covering will become permanently attached to the line of bone suture. I have secured for the anterior surface of the patella perfectly healthy tissue. The scar that will necessarily result from the operation, will be in a well protected place, it will not be exposed to prolonged, continuous irritation, incident to locations previously selected. Witness with what ease the assistant is suturing the external wound, with a facility never within reach if you make the old-fashioned incision with the convexity directed downward; hence, I would advise in all operative treatment, requiring full exposure of the knee joint, a semi-lunar incision with the convexity directed upwards, the margin of the flap about an inch above the upper border of the patella. You are aware that the advice is given, even at the present time, the assertion that in operations for tubercular knee joints, it is not only desirable, but necessary to remove the patella; we have no reason to exempt the patella from the general rule that is becoming, or has become an axiom in general surgery, to remove only diseased, never healthy tissue. I have pointed out to you the uses of this long bridge in resection of this joint. It is necessary in such an extensive operation, to apply over this large wound a very copious hygroscopic antiseptic dressing. We have, I hope, guarded sufficiently against primary wound infection, it is now our duty to protect the patient against such an occurrence in the future, and the less the wound

is disturbed, and the least number of times it becomes necessary to remove the dressing, the greater the possibility of obtaining an ideal wound healing, in fact, I hope that we have left the parts in such a favorable condition, that this wound will heal under one dressing. It is my hope that no indications will arise, necessitating the removal of the first dressing, for at least three or four weeks. We can hardly expect with a man of his age, although we have been exceedingly conservative in the removal of the joint structures, that we can obtain anything else but healing by partial ankylosis, in fact, it is my intention, rather, to favor this termination. If the patient were only 15, 20 or 25 years of age, I should make a faithful effort after such an operation to restore motion after the external wound is healed, but in a man at his age, anxious again to follow his occupation, to support himself and family, it is our duty to initiate such a course of treatment as will enable him to leave the hospital in the shortest space of time, with a limb in a condition to render himself again useful in the community, hence the limb will be placed in a slightly flexed position, in fact, the patient is intelligent enough to have called my attention to the fact that he did not desire a perfectly straight limb, he desires a limb slightly flexed, a wish which meets with my hearty approval. We will now secure for this limb then, a desirable angle, and at once immobilize it in a permanent, fixed dressing of plaster-of-Paris. The assistants will now envelop the limb in a thick layer of aseptic cotton from the periphery up to the groin, which will provide a soft, yielding cushion to protect the soft tissues, and which will guard against harmful compression in the event that we should have failed in obtaining all the essential conditions for primary wound healing. I hardly believe, gentlemen, that we have as yet found a desirable substitute for the old plaster-of-Paris dressing, that is the dressing that will be used in the wars of the future. It is the dressing that fulfills all the indications, securing to perfection immobilization of the injured parts, a dressing that can be so readily applied, a splint that adapts itself to all irregular surfaces. It is therefore a splint that if properly applied, is the best and the safest safeguard against peripheral gangrene and localized pressure necrosis.

The limb will be kept in an elevated position, at about this angle (indicating), for at least six or twelve hours, an exceedingly important precaution in preventing unnecessary parenchymatous hemorrhage after such an extensive operation.

AMPUTATION OF RIGHT THIGH, LOWER THIRD, BY GENERAL SENN.

GENTLEMEN: We have just finished, what you will all admit to have been a very conservative operation, for a life-destroying serious joint affection in a man 50 years of age. I am very sorry indeed that the conditions presented in this our next patient, although he is younger in years, render it necessary this morning to make a mutilating operation, for the same pathological conditions, but affecting two great joints instead of one. It is not necessary for me to make any extensive remarks to justify my diagnosis in this case, as tubercular disease of the ankle and knee joints. The case is an exceedingly interesting one from an ætiological standpoint, illustrating over and over again what we have claimed for years, the infectiousness of tuberculosis, the disease commencing in this instance in the same insidious manner as in the one which has just left the arena. The disease of the ankle joint, commenced after a simple innocent sprain, followed, however, by an insidious tubercular affection, which has now reached its maximum destructive effect, having resulted in complete destruction of the soft structures of the joint, and as is evident by exploration of the joint with a probe, it has extended beyond the cartilage, into the articular extremities of the bones entering into the formation of the ankle joint. In fact, here is a case of so-called caries, which is in reality an effect of disease, not a disease *per se*. Caries of bone is produced by molecular destruction of bone tissue by granulations and is in ninety-nine out of a hundred cases, the result of a tubercular inflammation. I was encouraged when I was asked to examine this patient, to make for you this morning a conservative operation on the ankle joint, I had already decided to make a typical resection of this joint,

when my attention was called to the knee joint, where I found all of the pathological conditions which warranted me in claiming for it a similar origin and character, as the affection of the ankle joint. To us, it is an exceedingly important matter to discuss the ætiological relationship existing between the disease of the ankle and the knee joints. I believe that in this case, there is absolutely no direct ætiological connection between the ankle and between the knee joint affections, but the infection of the knee joint can in all probability be traced to the same focus that primarily produced the disease of the ankle joint. There is great danger that in this case, with two tubercular joints, the seat of secondary infection with pus microbes, the patient would soon become the victim of pulmonary tuberculosis, tubercular meningitis, or even of disseminated miliary tuberculosis, if the peripheral lesions were allowed to pursue their own course, hence, in order to meet the pathological conditions, it becomes necessary for us to sacrifice the lower limb and make the amputation through the thigh, eliminating by the same operation the two tubercular joints. It has been my custom for years, never to burden the student's brain with names attached to operations immortalizing distinguished surgeons, important as these things may be from a historical stand-point, they are useless in practice. There are only a very few essential principles that become necessary to memorize and to carry into effect in amputating through any part of the lower or upper extremities. If you will remember that it is very important to make the incision in such a manner as to bring the resulting scar away from pressure in wearing an artificial limb; if you will remember that it is quite essential in order to secure an ideal result in all amputations to preserve the periosteum and in order to prevent a common and very painful affection, neuroma, that the principal nerve trunks should be cut off at least an inch above the level of the incision through the deep soft part; and if you will not forget that it is important under all circumstances to secure complete hæmostasis, you have all the essential rules that should guide you in making an amputation anywhere. Hence the names so frequently attached to the many different operations, names that have

made the student's life a misery and their practice often a failure, do not deserve as much attention as they have received in the past.

The operation that I am just about to make, through the thigh, may be regarded as a type for any amputations of the upper or lower extremities. In order to throw the scar away from where it will do harm, it will be necessary to make one long and one short flap, whether you take a long flap from the front, from the side or from behind is immaterial, you will take tissue where you can obtain it, you will make the amputation as far away from the body as possible.

It makes my blood curdle and my hair stand on end when in the 19th century, during this progressive age, men are held up in courts of justice to answer a malpractice suit for having made perhaps a posterior long or a lateral flap, but old text-books are still revered by lawyers, but they are of little use to the surgeon. If called upon, under such circumstances, do not hesitate for a moment in supporting your colleague, whether he has made a long anterior or a long posterior flap. Rest assured that if he is a progressive man he has taken the flap from the region best adapted to serve as a covering for the stump. (Applause.) Here, fortunately, we are in a position where I can take the flap from where it is most desirable to take it. I wish here to make a long anterior flap, which is the ideal flap, of course, or drainage to the wound, and as you will notice, the flap by its own weight will seek and maintain its proper position, at the same time securing the best conditions for efficient drainage. If the knee joint had formed sinuses I should have found the tissues over the anterior aspect of the knee joint in a favorable condition for a flap than on the opposite sides, I would have no hesitation in transgressing public opinion and would make a long posterior and a short anterior flap, I should then come to the rescue of the flap and instead of relying too much on gravitation in keeping the flap in place, I would furnish it with proper mechanical support by suturing splints and careful bandaging and establish drainage by making a button-hole in the center of its base. Here then, if I am to use names that will for all

time to come be associated with an amputation that will yield an ideal and useful stump, I must mention one man above all others, Bruns, the late distinguished professor of surgery at Tübingen, who advocated a long anterior and a short posterior flap in amputation for trauma or pathological conditions wherever his rule can be applied without violating the laws of pathology. I wish I could make here a lower amputation, and demonstrate to you Carden's transcondyloid amputation, but unfortunately we have to remove not only the knee joint but the tissues some distance above it, we must, therefore, necessarily amputate above the condyles. I have carefully examined the cutaneous covering, and believe I can make an anterior flap reaching down at least to the upper border of the patella, without running any risk of including in the flap any of the tubercular tissue, and I will therefore follow the rule that should never be violated, the same as in resection, of not removing, unnecessarily, healthy tissue, even in making a mutilating operation. We will use the same means to control hemorrhage during the operation as in the last case, and will again resort to elastic constriction which here must be applied very high up. Having made a long anterior and a short posterior flap I will divide the remaining soft tissues with a long knife, and make the incision a little conical, the apex of the cone directed upwards. I now make the last cut, a circular incision through the periosteum about two inches below the circular incision through the muscles, in order to enable me to obtain, not only for the soft tissues, but for the bone itself, its normal envelope. I will reflect here, as you notice, the cuff of periosteum with the same care as I would make the flap for the soft parts, because as far as the immediate risks of traumatic infection are concerned, this material is of more importance than the remaining deep structures of the limb. I will now saw the bone through in such a way that the sawn surface will be on a higher level than the section through the soft tissues in order to prevent undue prominence of the bones in the stump so that the patient can wear an artificial limb, with comfort. The end of the bone as you observe, is even, but there

are sharp edges left, and if these were allowed to remain they would become the cause of much trouble, consequently I chip away these sharp margins with bone forceps in order to protect the periosteal cuff against the harmful effect of linear pressure. You notice the periosteal cuff will be abundantly long to supply the cut end of the bone with its normal covering. I wish to isolate and tie the arteries separately and in a second ligature about one-third of an inch higher up I shall include the accompanying veins. I believe it is very important for us to place the vessels in a condition best adapted for closure by cicatrization in the shortest space of time. In ligating a large vessel, it is important always to use ligature material that will be removed by absorption, an absorbable ligature cannot be excelled, and I believe we have overdone the last few years in the way of using silk ligatures, which to me, have often become a source of great annoyance, and more so to my patients. A silk ligature that fails to become encysted in a suppurating wound, is always a source of mischief. I have now applied one ligature, the next ligature shall include not only the artery but also the accompanying veins. I am tying with a double ligature the second one of which includes also the veins. The bloodless space in the artery, 4 to 7 days, becomes closed permanently by granulation tissue. We will now seek for additional vessels, muscular branches, if any of them can be found and tie them before the constrictor is removed. I am now looking for the sciatic nerve, which I find here, buried in this mass of fat. It is extremely important for to remove at least an inch or two of this nerve in order to prevent the development of a painful neuroma later a frequent sequela of amputations unless neurectomy is practiced, a source of much pain to the patient and chagrin to the surgeon. Such a complication seldom or never sets in if the nerve end does not remain in the scar of the amputation wound. You will always find the neuroma involved in the cicatricial tissue. We have ligated the large vessels, we have resected the nerve, and we will resort to some means of arresting unnecessary parenchymatous oozing. I will see, however, whether the flaps are as they should be before we go any further, because now would be the

time to correct any mistakes as to the length of the flaps. You see the anterior flap falls down into its natural position, there will be no tension, I have made the flap about right as far as the length is concerned. I will compress the surface of the wound firmly with a gauze sponge for a number of minutes, after removal of Esmarch's constrictor, in order to prevent unnecessary loss of blood. In patients debilitated by such an extensive tubercular disease, as in this case, not a drop of blood should be wasted unnecessarily. The assistant should be ready with hamostacs forceps, as I am about to remove the compress, to catch any spurting points that may be seen, all of which should be ligated, after which compression is resumed if necessary.

Now we have all had cases, in which the arrest of parenchymatous oozing proved a most serious task. I remember one case of amputation through the leg, where I almost despaired; the more I ligated the more it bled, surface pressure was of little avail. I hardly knew what to do; douches with boiling water, scalded the surface, but bleeding proceeded. Only after a long siege, by surface pressure and with irrigation of hot water, we were able to control the bleeding, in fact we had to resort to permanent compression by compress bandage that we finally succeeded in controlling the hemorrhage. I was anxious afterward to ascertain the condition of the tissues, that would satisfactorily account for this obstinate parenchymatous oozing. I found in the tissue subjected to microscopic examination, numerous encapsulated trichina that had wrought serious changes in the structure of the vessels and other tissues, and I am firmly convinced, that in many of these cases that will tax your patience and skill in this most important part of your operative work, you will find some tissue lesions that will account satisfactorily for the obstinacy of the parenchymatous oozing. Remember the important tissues concerned on the line of section made through the limb. I have attended to the nerve, I have ligated the arteries, I have ligated at the same time the large veins; the parenchymatous oozing has ceased, now I wish to protect as far as I can the most important anatomical constituents of the line of section, the vessels and the medullary tissue against the deleterious

effects of suppuration, should such a complication arise in this case. I will ask for a catgut suture, in order to take special care in protecting the ends of the blood vessels, because in the event of suppuration the ligated stump of the artery might separate and secondary hemorrhage would be almost sure to follow. I wish to bury, from the surface of the wound, the ligated blood vessels with a buried suture. I do not place very much stress on this being carried out in practice, but where time permits, and in debilitated patients, this is an excellent precaution. You notice that I am taking a deep suture, which entirely buries the arterial stump; I have protected the end of these blood vessels against the immediate effects of traumatic infection, and secondary infection from the surface of the wound that might occur later. I now wish to protect that most sensitive of all structures, to infection with pus microbe, the medullary tissue. It is fortunate for pathologists and surgeons that we are now in possession as a nation, of the rich pathological collection of necrosed bone from amputated stumps, harvested during the last war of the rebellion. Such specimens after amputation are now rarely obtained owing to the effective wound treatment that is now almost universally adopted. It is this traumatic osteomyelitis which so frequently resulted in pyæmia and death, it is this traumatic osteomyelitis that yielded the large collection of specimens of necrosed bone I close the medullary canal by bringing over it the periosteal flap which is again stitched with catgut sutures. Preservation of the periosteum and securing and maintaining an aseptic condition of the wound furnish the most reliable safeguards against osteomyelitis, necrosis and pyaemia. One of the trying conditions after an amputation through the thigh, is the tendency of the bone to project through the soft parts, giving a painful and often useless stump and often making re-amputation necessary. This follows either in consequence of the flaps having been made short or as the result of violent and prolonged course of muscular contractions. We have divided here, some of the strongest muscles in the body, the muscles that have lost their anchorage below, they seek a point of attachment above, consequently there is a tendency for the bone to project. In order

to guard, as far as we can, against this condition, I now resort to the second row of buried sutures, the muscles will be supplied with a temporary point of anchorage. We will make for them for the time being, a point of attachment below. I now make a row of muscle sutures not expecting that these sutures will bring the muscles over the sawn surface of the bone and keep them there permanently, that is not my intention, I could not do so if I wished, because nature's resources here will step in later and undo what I have done. You will always find in an old stump, all the muscles covering it that are placed over the bone intentionally, at the time of the operation, have wasted away by a gradual process, by inactivity and pressure atrophy. But what I do wish to secure for the next three or four weeks, until the process of healing has been completed, is to supply the muscles with a support below, a support that later will be removed spontaneously. The external wound will be closed throughout with silk sutures, that after the process of healing has been completed and the stump has become conical, that the scar will be above and behind the point of pressure. We are dealing now with a very large wound, there will be considerable primary wound secretion; the hospital surroundings here are not the very best, the patient is debilitated by disease and it will become necessary to establish tubular drainage, in the other case we attempt to gain this object by a capillary drain. Here I will drain by making a small button-hole in the middle of the base of the posterior flap, I prefer to do this, rather than drain from the angles of the wounds as I desire to obtain primary healing of the amputation wound throughout, at the same time the drainage will be at the most dependent point where it will prove most effective. The flaps will be stitched in the usual manner and the operation wound closed throughout. In the dressing it is important to again make use of compression as a means of guarding against subsequent parenchymatous oozing during the period of reaction, by making the antiseptic hygroscopic dressing copious, so that it will not only prove useful in absorbing and disinfecting the primary wound secretions but will prove beneficial by exerting a continuous equable elastic compression, which

not only guards against hemorrhage, but constitutes at the same time the best known means in securing accurate apposition between the wound surfaces. The stump will be supported by a hollow posterior splint and will be kept in an elevated position for at least twelve hours.

There were several other cases which had been selected for Dr. Senn to operate upon, but owing to the time having expired for clinical illustrations, they were passed over with a few cursory remarks. Recess was here taken until 2 o'clock.

AFTERNOON SESSION — SECOND DAY.

At 2 o'clock p. m. a majority of the delegates assembled at Armory Hall to witness the exhibition of the field appliances and work of the Medical Department of the U. S. Army, by a detachment of Hospital Corps from Fort Riley, Kan., under the command of Maj. Jno. Van R. Hoff, Surgeon U. S. A. Maj. Hoff commenced by putting the detachment, consisting of eight men, through a drill, after which he invited the inspection of the surgeons present to the equipments of the men; after which, a general explanation was entered into, regarding the different tents and their usages, which were erected there as explained, in the same position as they would occupy in active service. The details of every department were lucidly given, and were very instructive. After this exhibition Maj. Hoff took his detachment to the exercise ground below, where exhibitions of the following work were given:

BEARER DRILL WITH FIELD LITTER.
EXTEMPORIZED LITTERS WITH BLANKET, COAT AND RIFLE.
LIFTING, LOWERING AND CARRYING PATIENTS BY ONE, TWO, THREE OR FOUR BEARERS.
PASSING OBSTACLES.
FIRST AID DRILL.
THE APPLICATION OF TEMPORARY DRESSINGS, UTILIZING MATERIALS ORDINARILY AT HAND ON THE BATTLE FIELD, FOR SPLINTS, ETC.
ASSEMBLY OF SQUADS; FORMATION AND DISMISSAL OF DETACHMENT.

The neatness and dispatch with which the above exercises were carried out elicited frequent applause, not a single hitch occurring during the exhibition. At each particular branch of the above exercises Maj. Hoff explained in detail the method of instruction, and the valuable assistance in time of war of such trained detachment.

After this part of the exercises had been satisfactorily completed and discussed by the gentlemen present, Maj. Hoff invited suggestions from the surgeons present, as to what subjects they would like to see the detachment of the Hospital Corps work upon, and the following subjects were called for by the members present:

FRACTURE OF RIGHT CLAVICLE.
DISLOCATION OF LEFT SHOULDER.
FRACTURE OF RIGHT ARM, MIDDLE THIRD (COMPOUND).
FRACTURE OF LEFT FORE-ARM NEAR ELBOW.
HEMORRHAGE FROM RIGHT FEMORAL ARTERY.
PERFORATING GUNSHOT WOUND, LEFT CHEST.
RESUSCITATION OF APPARENTLY DROWNED.
SUNSTROKE.

These exercises were of a very interesting and educational character. Two men were selected to take the place of wounded men. Maj. Hoff acting as Army Surgeon, supposed to be on the battle field, saw the wounded men, and on examining them and finding the

nature of their injuries, described such injuries on a tag taken from a book which he carried for that purpose, and fastened it to the coat of the wounded man. The Hospital Corps then followed, and on discovering the nature of the injury from the tag, set to work in first aid dressing. This was done in a thoroughly scientific manner, showing the completeness of the training of said Hospital Corps, and the celerity with which it was done called forth the admiration of those present. Maj. Hoff then catechized the hospital detachment, as to why they did certain things in certain cases, and also asked the visiting surgeons to do the same; this was done quite extensively, and the promptness and accuracy of the answers given, seemed to not only surprise the questioner, but show a thoroughness of training.

Maj. Hoff, at the conclusion of the exhibition, was highly complimented by all surgeons present.

Recess was here taken until 8 o'clock p. m., to meet at the Southern Hotel.

NIGHT SESSION — SECOND DAY.

Met pursuant to adjournment in the gentlemen's parlor at the Southern Hotel on Wednesday evening at 8 o'clock, when Col. Chancellor was elected chairman.

Col. Chancellor: Gentlemen, we have met this evening for the purpose of electing officers for the ensuing year, and the selection of the place for the next annual meeting.

We are now ready to receive invitations from any gentlemen, who would like to have us visit them, and who may have inducements to offer in behalf of their respective cities, for the holding of our next annual convention.

Maj. A. H. Briggs presented the advantages and attractions of the city of Buffalo, N. Y., and offered many flattering inducements to the Association to visit that city.

Maj. Charles Hayes extended an invitation to meet in Providence or Newport, R. I., in 1893.

Maj. George Henderson spoke in favor of Washington, D. C., and promised to make everything as pleasant and as agreeable as could be arranged for the Association.

After considerable discussion by Gen. Senn, Maj. Carr, Gen. Helm, Col. Chancellor, Maj. Byers and Maj. Halley, the result of the ballot was announced, and as Washington, D. C., had received the greatest number of votes, it was selected as the next place of meeting and the month of May designated as the time.

The Chairman then announced that the next order of business was the election of officers, and Maj. N. H. Henry was invited to take the chair.

The election of officers for the ensuing year resulted unanimously as follows:—

President, Gen. Nicholas Senn of Chicago, Ill.

1st Vice-president, Maj. N. H. Henry of New York, N. Y.

2d Vice-president, Lt.-Col. C. M. Woodward of Tecumseh, Mich.

Secretary, Lt.-Col. E. Chancellor of St. Louis, Mo.

Corresponding Secretary, Lieut. Ralph Chandler of Milwaukee, Wis.

Treasurer, Col. Francis J. Crane of Denver, Colo.

Maj. George Henderson of Washington, D. C., was selected *Chairman* of Committee of Arrangements of the Association for 1893.

Treasurer Col. Crane then read his report, which showed that the Association had received $311, and expended $244.50, leaving on hand a balance of $66.50.

The report was received and adopted.

An adjournment was here taken until the following morning at 10:30 o'clock.

THURSDAY, APRIL 21ST—THIRD DAY.

Met pursuant to adjournment at Memorial Hall at 10:30 a. m., First Vice-president Major N. H. Henry, presiding. Rev. John Matthews, D. D., was introduced and opened the morning session with prayer.

The Chairman announced that the first paper to be read was by Maj. George Halley, Surgeon N. G. Mo., on "First Aid to the Wounded."

FIRST AID TO THE WOUNDED.

BY GEORGE HALLEY,

Major and Surgeon, N. G. Mo.

This important time like the first portion of a human life to the future manhood or womanhood developing, like the first portion of the spring to the husbandman in its relation to a harvest that he expects.

Like the flower on the tree to the fruitage of the golden autumn days. Like the verdant blades of the grasses in the springtime to the beautiful harvest of golden grain that is to follow. It is the sowing time; and to a large extent determines what the harvest, and ingathering shall be. He then who sows to the wind will reap the whirlwind. Shall the seeding be the golden grain of the harvest of life and of future health and vigor, or shall they be seeds of death, with all the blighting and blasting attending it, and the fruitage nothing but apples of Sodon?

To the surgeon and especially to the military surgeon no time is so precious, nor can it ever be made to yield such rich results in the preservation of life, the conservation of force, and strength of an army, as the prompt and efficient aid, first rendered to the injured, whether on the field of battle, or in the duties of the camp. It is indeed "the season fair of living well." This is largely due to the character of wounds made in battle. More than in any other calling in life are the wounds punctured; the puncture being made by a blunt instrument. The wounds are very often made through or into parts of the body that are clothed, and the agent making the wound, is always more or less filthy or septic. The clothing is always surgically filthy, while the skin penetrated is never surgically clean.

Less than one hundred years ago, the heroic defenders of wooden walls when going into a battle stripped to the skin at least as low as the waist. Not perhaps because they thought to keep the wounds they would probably receive any cleaner, but experience had taught them that they, when wounded, suffered less pain, on account of there having no clothing over the wound, as there was no chafing. And next, because there was no danger of portions of the filthy clothing, being driven into the wounds.

That there was philosophy in this dress there can be no doubt. But we are not likely to have men so robed, or disrobed, to deal with in our duties as surgeons. And while we will have to contend with filth on the wounding agent, and filth on the wounded body, we will also have the danger of contamination of the wound by fragments of clothing, that may be drawn into the wound when it is being inflicted, and also of it being still further rubbed into it, by the clothing before the injured soldier, can be transported to a safe place for dressing. To us there is practically no way of securing an aseptic wound, when made. What then is our duty as the renderers of first aid to the wounded?

First in point of importance is the arrest of hemorrhage.

The surgeon on the field who will be of the greatest benefit, to his command, is he who can on an emergency, render his patient's life for the time being most secure. In the arrest of hemorrhage, now that the tornequette has been abandoned, the elastic bandage will hold the first place. A stout piece of rubber tubing

will do the best for this purpose. The thin Martin bandage being too feeble and cumbersome. If the vessel can be easily reached, a much better method would be to apply the hemestatic forceps at once, and if possible apply a ligature of catgut or silk. Plug the wound temporarily with aseptic gauze, apply a bandage lightly, and at once have the patient removed to a field hospital to be dressed. In this way the wounded, would not be made worse or more filthy, either by handling or coming in contact with the clothing, while the ebbing tide of life would be safely controlled, and probably saved. My reason for not putting on, elastic, or keeping on, all wounds where the bandage can be put or kept on, is that when there is a question of saving a limb, where a large vessel has been divided, it will always be determined against the limb, by the long continuance of the elastic bandage. It is now, and probably always will be, impossible to have a wound cleaned and made aseptic at the first seeing, owing to the surroundings. But if that could be done it is of all times the best, to insure happy results.

Where there is any question of the presence of foreign bodies in the wound or filth of any kind, the exit should be freely enlarged and the cleansing process thoroughly carried out. The length of the wound does not to any considerable extent, increase the dangers of the injury. One speck of filth, one shred of clothing, one strip of filthy integument, left in ever so small a wound will do more harm, more seriously endanger life, and much longer invalid the patient, than a wound half a yard long in the soft parts, when it is kept aseptic. Make no hesitation about enlarging the wound if it is at all necessary, in order to put the wound in a better hygienic condition. This part of the work, however, will generally have to be done at the Field Hospital than on the field of battle, or place where the wound is made.

Next after hemorrhage is the reaction from the shock. This has had many, and often contradictory rules. Some surgeons are in favor of giving to the patient, at the earliest moment possible opium in some form. First, to relieve pain, and second to prevent depression of shock. The first of these it does without doubt, and it is often a most important thing to do. The second I am satisfied is open to question. Alcohol, either by the mouth

enema, or hypodermic injection, will in my judgment do very much better, and more quickly bring about reaction. The quantity to be given should always be moderate so that alcohol narcosis will not be produced when the full effects of the drug are obtained. I have obtained the best results by hypodermic injections combined with small doses of strophanther, the effects not only being obtained by a smaller quantity, but stimulation was more pronounced and the narcosis less. Often the shock is so great after an injury, that there is no absorption from the stomach, fluids put in it simply being retained for a time and then vomited up unchanged. This is to a certain extent true of enemeta as well. Hypodermic injections in such a condition is the only resource. A remedy that deserves more thorough trial than it has yet had its glonoin (nitro-glycerine). It may be given hypodermically along with alcohol better than in any other way. From $\frac{1}{300}$ to $\frac{1}{100}$ of a grain may be given every fifteen minutes to a half hour until, reaction sets in.

The care required in removal to a place of permanent attention is more than is ordinarily bestowed, irreparable injury often being inflicted in transportation. The first transportation has usually to be done in a hasty manner and in the midst of great excitement. The ambulance squad should be carefully instructed in the art of lifting and carrying so that the least injury may be sustained; this is especially true where bones are broken; the bones often being made to protrude by the rough handling when by more gentle means there would have been no such injury.

As a surgeon in the volunteer service I would suggest that we give special attention to this branch of our duty because our duties in time of peace being largely honorary we may find in time of actual service that in the duty of preparation for actual service we will be found sadly wanting. Each company, or at least each regiment, should have two or three squads, drilled in lifting and carrying, so that when the demand is made on us, we will not be found wanting.

The next paper was read by Lieut.-Col. Herbert L. Burrell, Medical Director M. V. M., entitled, "Is It Ex-

pedient to Have a Physical Examination of Men Before Enlisting Them as State Troops."

IS IT EXPEDIENT TO HAVE A PHYSICAL EXAMINATION OF MEN BEFORE ENLISTING THEM AS STATE TROOPS.

BY HERBERT L. BURRELL,

Lieut.-Col. and Medical Director, 1st Brigade, M. V. M.

In the title of this paper I have used the word expedient, believing that all persons interested in State troops recognize the propriety of a physical examination. The difficulties which present themselves in carrying such a measure into effect in the States, with which I am familiar, are the following:

First. The expense involved in conducting such an examination.

Second. The annoyance to the citizen of being rejected, and the influence that a rejected recruit may have in deterring other enlistments; hence, added difficulty to the company commander in keeping up his enlistments to the required quota.

In the State encampments which I have visited, I have been impressed with the necessity for a judicious discrimination being exercised by some medical officer in making enlistments. In my own commonwealth the militia of the State includes (Sec. 1st, Chap. 411, Acts of 1887, Mass. Militia Laws), "Every able-bodied male citizen resident within this State of the age of eighteen years, or under the age of forty-five." * * * This constitutes the persons subject to military duty.

"The active militia (Sec. 21. *ibid.*) shall be composed of volunteers, and shall be designated the Massachusetts Volunteer Militia, and shall first be ordered into service to resist invasion, to quell insurrections, to aid in the suppression of riots, and to aid civil officers in the execution of the laws of the Commonwealth, or in time of public danger."

This gives us two distinct services for which the militiamen can be called upon to act: first, to resist invasion; and second, as an aid to the civil authority in enforcing the laws. It would seem that all men would recognize that a force to be used for

either of the above purposes should be free from any serious imperfection. Is that the case in the National Guard in my own Commonwealth? I regret to say that it is not. The personnel of the militia in Massachusetts has steadily improved during the last twelve years. Not only have active, more able-bodied men been enlisted, but more influential men have officered the State troops. Drill and discipline has steadily improved; but there has been no movement in the medical department towards an examination of enlistments.* In the report of the adjutant-general of Massachusetts which will soon be published, there is recommended a recruiting standard, as follows:—

"A recruiting standard should be established, to prevent the enlistment of men unfitted for military service. No youth of immaturity should be accepted, nor should a man be enlisted because of his giant proportions."

This recommendation assumed the importance of a general order, No. 1, which was issued Jan. 13th, 1892, an abstract of which is, "Enlisting and mustering officers will be assured of the good physical condition of recruits before enlistment and muster into the service, and no man of abnormal proportions will be accepted."

The State of New Jersey has taken a step farther. On March 29th, 1892, in General Order No. 2, "The following resolution adopted by the State Military Board and approved by the Governor and Commander-in-chief is published for the information and guidance of the National Guard."

"Regimental and battalion commandants are authorized, whenever they deem it expedient, to send any recruit before the

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* In the 1st Corps of Cadets, Massachusetts Volunteer Militia, a General Order, No. 15 was issued August 4th, 1887, and is as follows: —

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Par. III. Every candidate for admission to the Corps hereafter must be examined by one of its medical officers, who will, if the candidate is physically qualified to perform the duty of a soldier, give him a certificate to that effect, which certificate will be forwarded to the Committee on Elections with the application to enlist. The Committee will not present to the Corpse the name of a candidate lacking such a certificate.

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surgeon or assistant surgeon of their commands for physical examination, and upon report being rendered that he is unfit for service his application for membership shall be rejected."

Owing largely to the efforts of Major Marion in my own State there has been introduced in several of our regiments an athletic association; competitions have been held, and the time has come for a physical examination of recruits.

The brigade in which I have the honor to serve as Medical Director was mobilized one cool October day at Worcester, which is in the center of the State. Nearly twenty-five hundred men were brought into the city of Worcester, carried out their work of the day, which consisted of drills and regimental movements, a street riot drill and a four mile march. During this march there were twenty-eight men from the brigade who were assisted by the ambulance corps, some of whom were obliged to ride in the ambulance. Many of these men were disabled by temporary illness, but a number were physically incapacitated for serving as guardsmen. They were the following: Five men had serious flat-foot, which they confessed incapacitated them from walking long distances, three men had varicose veins, two of them having large varicose ulcers on their legs; and four men had serious cardiac disease, two having loud aortic murmurs.

These twenty-five hundred men were mobilized in a large city. The discipline could be termed almost perfect, for not an arrest was made for any disorderly conduct.

In a company of cavalry in one of the New England States some ten years ago, on a warm June day the troops were mounted and rode about twenty miles. The battalion started with seventy-two men. When they arrived at their destination there were sixteen men rode into the camp ground; the rest for various reasons, among which a fair proportion of bad horsemanship should be considered, had stopped by the wayside, shipped their horses forward, and came on by train. The next day it was estimated by a medical man that only eighty-five per cent. of this force would have been able to stand three days' campaigning.

At one of the smaller State encampments in the East there was discovered a man who had been enlisted a fortnight before camp, who had a hard chancre of the lip. This was, of course, a constant

menace and source of infection to every man in the company mess. The man was promptly discharged when the disease was recognized. Numerous instances of confirmed epileptics have been brought to the brigade hospital during our annual encampment in Massachusetts.

It is a perfectly fair question whether a physical examination of recruits is not a matter of ordinary safety to the individual and to the State itself. Numerous cases have been brought before our State Legislature for compensation to be received for injuries. In one instance in this past year a man has claimed that his eyesight was destroyed on duty, and has received an annuity of two hundred dollars a year for five years. In 1887 a man with epilepsy enlisted and had a sunstroke, from which his friends claim that he became insane. The State is now paying his wife an annuity of two hundred dollars a year for five years. A physical examination would be a great protection against fraudulent claims against the State. How easy it would be for a man with a hernia to enlist in the artillery, and after riding on the hard caissons to claim that he was ruptured from this service, and bring a bill for compensation against the State.

My own belief is that such an examination would not alone be of benefit, but is almost an absolute necessity. The State of New York has recognized the importance of this subject by issuing a general order (a copy of which is as follows), directing a physical examination of all recruits before enlistment. The question of expediency is one of tact. It is not necessary to adopt so strict a physical examination for State troops as in the United States army. The guardsman is a volunteer; but any serious defect in his physical condition which would prevent him from doing full duty to the State, or injuring himself by performing the duties of a guardsman, should cause his rejection.

I think that all recruits before enlistment should be examined by a medical officer, and that after consultation with the company commander he should reject those found unfitted. The reason for this introduction of the company commander into what at first seems a purely medical question is one of expediency. Recruits as they are enlisted into companies often come in batches. John Smith and Tom Brown will go into the company

if Frank Jones, who is the best fellow in their crowd, goes in. This may seem a departure from a standard of medical requirements; but to the line officers and company commanders it is a condition requiring consideration. If Frank Jones is rejected because he has a varicocele which does not interfere with his occupation the State may lose the services of John Smith and Tom Brown. This is looking at it from the company commander's stand-point.

The advantages of a medical examination of troops can, I think, be made quite evident. If the State pays for the services of able-bodied men it is our duty as officers to see that she receives an equivalent. A man who is incapable of sustaining the fatigue of a four mile march would be an incubus upon the rapid movement of troops, and in all our future uses of State troops rapidity of movement will be an important consideration. Every officer who has campaigned knows that the sick are the greatest impediment to the movement of troops. A body made up of integral parts has the strength of the weakest, not of the strongest. Efficiency of recruits, not numbers, should be the guide. At present the State pays annuities for (alleged) permanent injuries. The amount of money expended for this purpose would nearly pay for a systematic examination of massed recruits.

The advantages of this system are the following:

First. The securing for the State able-bodied men, and its protection against fraudulent claims.

Second. The eventual improvement of the esprit de corps of organizations by establishing the principle that only sound men can be members of the National Guard.

Third. The knowledge of the civil authorities that when they call upon the reserve strength of their State for the enforcement of laws, they will not be leaning upon the staff of a bruised reed.

A discussion followed the reading of the above paper, which was participated in by Maj. Carr, Col. Briggs, Gen. Kittredge, Maj. Hoff and others.

GEN. SENN: I think it is proper at this time that some action should be taken, which shall give substantial expression from this Association, concerning the services of the surgeons of the regular army, which have added so largely to the interest of this and our last meeting. In order to do so, I move you, sir, that Article V. of our Constitution, making provision for the election of officers, be so changed, that "the officers of this Association shall consist of (I) a President, and (II) an Honorary President, the latter shall be a member of the Medical Staff of the United States Army."

Motion adopted.

GEN. SENN: I move that the Secretary be instructed to cast the unanimous vote of this convention for Col. Greenleaf of Washington, D. C., for Honorary President of the Association of Military Surgeons of the National Guard of the United States.

Motion adopted.

GEN. SENN: Since the meeting in Chicago, death has stepped into our midst, and in order that we may take proper notice of those who have been taken from us, I will appoint as a Committee on Resolutions, Maj. M. C. Barkwell, Gen. Scott Helm and Maj. L. C. Carr.

The next paper was read by Lieut.-Col. C. M. Woodward, Surgeon-General Michigan S. T., entitled "The Sanitation of Military Camps." It was as follows:

THE SANITATION OF MILITARY CAMPS.

BY C. M. WOODWARD,

Lieutenant-Colonel and Surgeon-General M. S. T.

MR. PRESIDENT AND MEMBERS OF THE ASSOCIATION OF MILITARY SURGEONS OF THE NATIONAL GUARD OF THE UNITED STATES: The subject of the sanitation of military camps is a broad one, and must

necessarily be treated in a triune form — first, in regard to the camp itself as a whole, the ground on which it is made, and the soldier as an individual part of that camp.

The first two items of my subject can be treated together, or are interchangeable, the latter, the *soldier*, as an individual part of the camp, by himself — and well treated, too.

First, the selection of the site for camp. In all cases where a site for a military camp is sought, a well qualified medical officer should always accompany the "camping party," as the sanitary adviser, and his judgment should be heeded by the officer in charge, no matter what may be the *rank* of either, for the medical officer is presumably better qualified to give sound advice with regard to the sanitary aspects of the site than any other officer could be.

The ground for camp, wherever practicable, should be one of an elevated nature, bordering on a rapidly running stream, or a lake of pure water, one fed by springs if possible, or else having a free outlet and inlet. A rapidly running river with high banks would be preferable, in order to secure good natural drainage, and where the ground or subsoil water is very low, at least eight feet below the surface, which should slope away from the river, stream or lake to a level plateau of considerable extent and covered with a thick sod of timothy or blue-grass cut short. It is possible to obtain grounds similar to these in almost every State in the Union and where such ground is once secured, it is, in the opinion of the writer, best to make this a permanent camp ground at least for a number of — about *five* — years, as being not only less expensive to the State, but better sanitary conditions can be attained, with less annual expense and greater comfort and health to the soldier.

In cases where the ground here pictured cannot be obtained "in toto" and a portion has a shallow ground or subsoil water, deep drainage should be made, blind ditches six to eight feet deep laid with the horseshoe tile should thoroughly intersect every portion of the ground, to secure thorough and perfect drainage. And this again as a matter of economy, utility and health, makes it desirable — *cœteris paribus* — to secure a permanent camp ground. Should any small swamp be unavoidably near, it should

be cleared of brush and burned over, and then an outlet sought, by thorough and deep drainage, to a point where sufficient fall can be obtained outside the jurisdiction of the camp; preferably the drain should open into a ravine or into a river or stream, below the camp, but not into a lake if any portion of the water supply is to be taken therefrom. All unavoidably damp places about camp or any depressions in the ground where water is liable to collect and remain, should be thoroughly sprinkled with ferric sulphate, and then filled to the level with dry earth or gravel. Ferric sulphate, mercuric chloride, or the "compound chlorides" known as "Platt's chlorides" are all cheap disinfectants and any camp may have the benefit of their use. If thorough drainage of swampy places cannot be secured, then the brush and undergrowth should not be disturbed in this particular spot, but thorough drainage of the camp ground proper should be secured at all hazards, to avoid hazards of a more serious nature.

Next to the securing of a proper site for camp, in point of importance is the water supply. This, if the camp is situated on the banks of a rapidly running river, entirely uncontaminated by sewerage or other impurities, can be taken from the river at a point half a mile up stream, and conducted by means of galvanized iron pipes through the camp, but the water from a lake, unless it is a large one, and noted for its purity, had better be avoided. One method of securing a water supply of almost undoubted purity, and which would not be greatly more expensive, than other methods, would be to drive several wells in close proximity to each other, and entirely on the opposite side of camp from the kitchens, latrines and sinks, and indeed, outside the guard limits. From these artesian or *driven* wells, of sufficient number and capacity, can be obtained a comparatively and, in most instances, a perfectly pure water supply, which can be forced in abundance through the camps by means of conducting pipes and hydraulic ram or steam power. Surely there can be but very few portions of our country, where it would not be possible to obtain in this manner a good water supply, almost wholly free from the objectionable features of other methods. The health of any command or camp is largely influenced by the character of its water supply. It is hardly necessary to go into

any detailed account of what the *composition* of *pure* water should be, it is simply sufficient to say, that the medical officer should satisfy himself that the water is sufficiently pure for potable purposes and free from organic matter, *free ammonia* or *albuminoids*, and if not perfectly pure the water should always be thoroughly boiled before being used.

The disposal of slops and garbage from the kitchens, so as to render them innoxious, is also a matter of great importance.

For this, it is believed, the greater number of Military Surgeons operating in the field, as is the nature of our camps of the National Guard, favor decidedly the system of "latrines." Latrines, properly so called, as you all know, are vats of galvanized iron, or of earthenware, sunken into the ground to receive refuse matter, but the *latrines* which are now referred to, are simply square or rectangular holes dug in the ground from four to six feet deep, four wide, by six long, and placed at a convenient distance from the rear of the cook tents or kitchens. Where a gravelly subsoil can be obtained, it is best, as it allows the more fluid portions of the refuse and slops to soak away into the gravel, the remaining more solid portions are to be frequently covered, during each day and evening, by light layers of dry earth, — the earth from the excavation of the latrine having been left by its side for the purpose. In this way, with care, each latrine will last for a considerable time, securing a perfectly sanitary condition, without the necessity of digging new and fresh ones. In most cases, the first system of latrines, if properly made in the first instance, and properly managed, will last throughout any ordinary camp and still be in good condition at its close. In cases where the soil is not porous, or where there is a hard clay subsoil, it is well to dig a ditch leading off from the bottom of the latrine for about twenty feet, and laid with the horseshoe tile and covered in, to allow the fluid to drain away into the soil, which will prevent the filling up of the latrine so rapidly.

Dry garbage of considerable bulk often collects, and *sometimes* in large quantities, such as bones, trimmings from pork or other meats; cabbage leaves, parings from potatoes, apples and oranges, bits of bread, and refuse of many kinds; these can

often be collected in one place without the limits of the camp, *burned to ashes* for "that which is purified by fire *is* purified."

The sinks are to be dug in a similar manner to the latrines, only longer and deeper.

Seats with commode-holes should be placed in position, and the greatest neatness observed in their use, which is too frequently disregarded by the men.

The urinils proper should be placed in an apartment separate from the sinks; they should be made of galvanized iron or tin, having a pipe or tube of sufficient caliber leading into the sinks, and these should be frequently flushed with antiseptic and deodorizing solutions. For this purpose solutions of the Chloride of Zinc is one of the best, from its power in destroying ammoniacal compounds, — the compound chlorides, known as "Platt's Chlorides" is inexpensive and efficient, and its use would undoubtedly give satisfaction. Some solutions of this kind or composition should be used several times a day, to secure a comparative freedom from ammoniacal decomposition, and consequent unsanitary conditions.

Wooden urinals and troughs should never be used if it can be avoided, for obvious reasons. This and the sanitary care of the sinks is of vast importance. For this purpose a suitable police force of either citizen employes or soldiers, should be placed under the exclusive control of the Medical Department; so that the services of this force can be had when needed. The sinks should be covered in with dry earth several times each day; especially should this duty be attended to about half an hour before each meal time, and again late in the evening, just as the dew is falling, to prevent the dissemination of noxious gases through the camp, and this is the reason for saying in another place that the Medical Department should have men under its entire and complete control, to attend to these duties.

It can be recollected that in years past it has been a cause of great regret that it was not always possible to have these duties attended to as they should be, and, when most needed, for the reason that the Quartermaster's Department had complete control of all the civilian employes and police force, and forsooth the Quartermaster, or Quartermaster-General, always had something

for the men to do, and they could not be had to do any work in the Medical Department when their services were most needed. Medical officers could not do the work themselves, as the writer feels sure they have often been tempted to do, for they would then have been open to the charge "of conduct unbecoming an officer and a gentleman," yet they were held strictly accountable to their superiors for the sanitary or unsanitary condition of the camp. Of what advantage was it to the Medical Department or the troops, that its officers were * * * out every morning before reveille to *inspect* the camp without the power or force to rectify existing evils, and still with this responsibility resting upon them. It surely is disheartening in the extreme. It is hoped that in future years a different state of things may be brought about.

If the power to attain and keep a strictly sanitary condition of camp is placed exclusively in the hands of the medical officers, with full power, and the men for this purpose under their entire control, such matters would be promptly attended to, with the result of a vast advantage to the health, welfare and comfort of the troops.

The tents should be pitched upon the dryest, best-drained and most-salubrious portion of the camping ground. In order that good sanitary conditions may be maintained, we must heed the teachings of the Good Book, and "despise not the day of little things." Every tent in every line of tents, should be thoroughly ditched all about, to secure greater dryness of the space of ground covered by the tent. It is not necessary that this work be done by the Quartermaster's Department when the tents are pitched, but this department should furnish spades in sufficient numbers to each company, and it should be a part of the *duty* of the occupants of each tent, under the supervision of a commissioned officer, to put a well-made ditch fully around it, and, where there is a sufficient fall of ground away from the line of tents, the ditches of each tent should be connected with its neighbor tent, in the rear, by a "ditch of communication." This ditching around the tents should invariably be done by the men under orders, and should be considered as much a part of their *duty* as the *drill in tactics*, or the doing of *guard duty;* for the first duty of a soldier should be, to care for himself.

It can be recollected by the writer that many a time in the past, for the lack of better tools, he has ditched his own tent with a pointed stick, but sometimes if this duty were neglected he would occasionally be "fluently" reminded of his dereliction of duty, when some night a brisk shower should come over the camp, by a stream of cold water flowing down his back, which may be good treatment for the removal of a bad cold taken the day previous, but not the best thing for those having the rheumatic diathesis.

Each morning immediately after guard mounting every tent having a wall should be reefed up from the bottom to the skirt, all around and tied there, to allow of a free circulation of air, and it should be left so until *four* p. m., unless in case of storm or inclement weather. I repeat *every tent* should be raised — those of the officers as well as those of the privates. It has often been observed that the line of privates' tents were duly raised at the proper time while those of the officers remained closed all day.

Officers should not themselves forget the lessons of health they are trying by these orders to instill into the minds of the soldier.

The bed and bedding should also be so arranged as to be thoroughly aired, and freed from dampness that may have been absorbed during the night, and withal folded in a neat and tidy manner.

Company quarters should always be kept thoroughly *policed* and freed from all *appearance* of evil — that is, all scraps of paper and refuse of any kind should not be allowed to collect in or about quarters or in camp, for although they may not be positively *unsanitary* in their presence, they look so. And the allowance of this condition might lead to greater carelessness and neglect on the part of the men.

In treating of the soldier himself as a component part of the camp and as the most responsible and interested factor of the sanitation of military camps, it would not, in the opinion of the writer, be improper to say that as "cleanliness is akin to Godliness," so also is it one of the important factors in the sanitation of the camp.

The *soldier* should be *clean* in heart, mind, and body, and should let his moderation be known among all men.

The day before the departure for camp — (speaking now more

particularly of the camps of the National Guard of the United States, as they are entered year by year by our troops) — every soldier and it may be said, every officer as well, should take a thorough soap and water bath from head to foot, thereby placing himself on the best possible footing. This will encourage a free action of the skin, and will aid very much in the preservation of health — he will be better protected from the liabilities to attacks of intestinal diseases, and from the effects of overheat. If, coupled with this absolute cleanliness, due attention is paid to the diet, in quantity and kind, many diseases of camp-life may be almost wholly avoided. In most instances, where permanent camp grounds are provided, bath houses can be furnished, so that during the camp also due attention can be given to this portion of camp sanitation — that of well regulated bathing for the men, which is frequently as important as that the sinks and urinals, the latrines and their contents, and the thorough policing of camp, should be well attended to.

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Attention has been called in a previous paper to the matter of diet, and a more simple mode of living recommended, and that the soldier should be confined more nearly to the army ration, of best quality, prepared and cooked in the best manner, as being most likely to prevent indiscretion or overeating, so often a cause of disease among our troops, especially where "nick-nacks" are furnished in the profusion in which they often are.

A few words relative to the canteen system. There seems to be a difference of opinion among the medical officers of the regular army, relative to the value of this system, but it is believed the greater number favor the system, and statistics show that at posts where the "canteen" has been established, there has been a reduction in quite a large per cent. of the number of cases of alcoholism. Some posts show a reduction of as much as 50 per cent. over previous years and before the system was established. According to the evidence, it appears that where there is a well regulated "canteen" there are fewer cases of drunkenness and insubordination and the habits and contentment of the men have improved. No doubt at posts or camps where it is impossible to secure a good and pure water supply, this sys-

tem has indirectly, favored the preservation of health and Sanitary conditions, but this goes without saying, that if the soldier would confine himself to his coffee, tea, oatmeal-gruel and barley-water, and avoid alcoholics altogether, it would be very much to his advantage in every way, health, manliness, courage, and all that goes to make the true man and soldier. It is to be regretted that there is among soldiers such a tendency to the formation of the "drinking habit," due in part no doubt, frequently to poor cooking, poor water, and in times of peace to the "ennui" and aimlessness of camp or barrack life, hence, if soldiers *must* drink, it is far better that the use of stimulants should be officially regulated by the canteen system, and under strict supervision.

A dry and well-drained camp ground, thorough and perfect policing and ventilation, a pure and abundant water supply, absolute personal cleanliness and temperance, good and simple food cooked in the best manner, and moderation in eating, are the six principal points of good sanitation of military camps.

The next paper read was entitled "Treatment of Wounds from the Aspect of Germ Infection," by Capt. Chas. B. Ewing, Assistant Surgeon of the United States Army.

THE TREATMENT OF WOUNDS FROM THE ASPECT OF GERM INFECTION.

BY CHARLES B. EWING,

Captain and Assistant Surgeon U. S. Army.

We understand by wound infection the introduction into wounds of specific micro-organisms, causing suppuration. I do not propose to include the forms of wound infection which may arise from those specific germ diseases known as tetanus, diphtheria, scarlatina, etc.

In order to arrive at a proper understanding of the treatment of wounds, we are to determine what those micro-organisms are, where they are to be found and the method of their introduction into wounds.

Broadly speaking, these pus-producing germs are known as the staphyloccus pyogenes, albus and aureus, the streptococcus pyogenes and the staphylococcus epidermidis albus (Welchii), a modified form of the albus of Rosenbach, leaving out of consideration all chemical pyogenic substances and sterilized cultures of various micro-organisms, which cause suppuration independently of these microbes. Neither do we consider those rare forms of the staphylococcus pyogenes, the citreus, cereus albus or cereus flavus of Passet, the staphylococcus flavescens of Babes, the micrococcus tenius of Rosenbach, nor lastly that producing the green fluorescent and the blue pigments, known as bacillus pyocyaneus of Gessard and the bacillus pyocyaneus (Beta) of Ernst, respectively.

The question of the relation of micro-organisms to suppuration is an old but very interesting one and we are indebted to Grawitz and DeBary for clearing up the matter. The trite dictum, "No suppuration without micro-organisms," was known by them particularly to be fallacious, inasmuch as germ-free chemical substances were shown to produce suppuration, yet the aphorism as a generalization remains correct.

Admitting then, the above, we proceed to a brief mention of,

Firstly. Germs constantly resident within or in close proximity to the wound.

Second. Those coming from without.

Under the first heading, we have only one, a coccus known as the staphylococcus epidermidis albus (Welchii.) This organism, though not verified by other observers, is thought by Prof. Welch of Johns' Hopkins', to be a permanent inhabitant of the skin in health and more particularly of the deeper layers of the epidermis, as well as an occupant of abscesses formed around stitches used in closing wounds. While Prof. Welch admits the close relationship of this pathogenic entity to the white coccus of Rosenbach, he shows conclusively wherein its genesis is different and should be designated as a separate distinct organism, because " possessing such feeble pyogenic capacity, as is shown by its behavior in wounds as well as by experiments upon rabbits, that the designation Staphyloccus Pyogenes Albus does not seem appropriate."

If it has been shown as Prof. Welch informs us, that his coccus is a constant inhabitant of the epidermis, it certainly differs from that of Rosenbach, inasmuch as it has never been claimed by observers, that the latter had its habitat in the skin at all. This new coccus will prove troublesome to surgeons, who place "drainage tubes and other extraneous substances into their wounds," and we must needs pause and consider, when we are informed that such an able exponent of our art, as Prof. Halsted of Johns' Hopkins', "has abandoned for nearly all wounds, the use of skin stiches, the edges of the wound being brought together with admirable coaptation by subcutaneous sutures." We are certainly greatly indebted to Prof. Welch for this very valuable contribution to surgical pathology.

Coming now to our second group: "Those germs coming from without;" we shall make mere mention of the species heretofore named, the staphylococcus pyogenes albus and aureus, and the streptococcus pyogenes. These cocci are so well known to you, that I shall not go into their history but merely say, that they may be introduced into the wound through the air, the instruments and dressings (particularly thread and drainage tubes when used), or the person of the operator, such as his hands, hair or perspiration, etc., leaving out of consideration auto-infection.

In speaking of the treatment of wounds, I shall premise by saying that *asepsis is only to be obtained through antisepsis* and without the latter, we cannot hope for the former. Antisepsis of the field of operation, except in certain regions, is much more easily obtained, than that of the hands, hence I shall direct your attention particularly to this, in doing which I can do no better than to ask your careful scrutiny of the most recent work of Welch, Kelly and others, which when crystallized is about as follows in *sterilization of the hands.*

Firstly. Scrubbing with sterilized brush, using soft soap and hot water, several minutes.

Second. Immersion in hot saturated solution, permanganate of potash, three minutes.

Third. Immersion in hot saturated solution, oxalic acid, three minutes.

Fourth. Immersion in hot common salt solution, three minutes.

Fifth. Immersion in hot, 1 to 1500, solution bichloride of mercury, three minutes.

An aseptic *field of operation* can be obtained in this way.

Firstly. Scrub and douche thoroughly, with soft soap and hot water.

Second. Wash with turpentine.

Third. Wash with ether.

Fourth. Wash with solution of corrosive sublimate, 1 to 1,500.

Fifth. Compress, soaked in above solution and applied over part to be operated on.

Sixth. Compress and roller bandage to hold the above in place.

The ideal dressing, after the incisions have been closed with sterilized silk, is one which seals the wound hermetically and prevents the invasion of pathogenic organisms, completely from without. This consists in applying a saturated solution of powdered iodoform in collodion, where the initial incision is through the integument and a saturated solution of powdered iodoform in ether, where the integument has been destroyed, by disease or accident. The incision is closed, the line of the wound, the skin and sutures are thoroughly dried and the solution applied, according to the conditions above mentioned, with a small camel's hair brush. Evaporation takes place rapidly and the dressing hardens evenly and firmly, acting as a splint to the part. It is important that not only the line of the wound and sutures be protected with the solution but that the neighboring parts for at least an inch be thickly covered.

The qualities possessed by this dressing are these: it is always satisfactory, simple and easily made. No additional dressings are necessary, except where the solution of iodoform in ether is used, in which case the ordinary dressings are sterilized and applied over the part treated. This latter solution cannot be regarded as the former, in the light of an ideal wound dressing, as the operations requiring its use are of an entirely different character from those demanding the iodoform-collodion solution.

The iodoform-collodion dressing can be left a week or more, then removed with ether and the stitches taken out. If, however, the staphylococcus epidermidis should have caused suppuration around the stitches, as indicated by pain, redness, local tender-

ness and elevated temperature, then the dressing should be at once removed and the discharge of stitch abscesses encouraged.

On the battle field the first dressing must of necessity be dry; consequently wound infection follows in a great many cases. This dry dressing itself may contain pathogenic organisms and in that way cause infection.

Germicidal fluids cannot be used unless concentrated and of small bulk in convenient receptacles for transportation, which is a very difficult problem to solve. Again, the question arises as to whether it is possible to obtain complete asepsis by the use of a dry dressing. I think we shall be obliged to answer in the negative. Then a fluid of strong antiseptic properties must be chosen, and that should be the very best germicide, as the quantity of fluid must be small, as space in an army chest and transportation are alike very valuable.

What shall it be? The best antiseptics of to-day, require that they be used highly diluted, consequently small quantities will hardly subserve the purpose of producing an aseptic condition.

Since writing the above, a communication signed by Dr. Kelly has appeared in the *American Journal of Obstetrics* to the effect "that saturated solutions of permanganate of potash and oxalic acid are NOT germicidal to streptococcus and staphylococcus, aureus or albus *in pure culture upon silk threads*, which have been infected for twenty-four hours" and he is "unable to explain the remarkable difference between the experiments made upon the hands and the severer tests applied in the bacteriological laboratory."

Capt. Ewing at the close of his paper made an apology for its brevity and incompleteness, and stated that it was simply read to initiate the matter, and bring it up for discussion.

GEN. SENN: This is a subject for special study, and I express the hope that Capt. Ewing, next year, will honor us again with a paper on that theme. The paper is well written and shows deep research, and is of great importance to all Military Surgeons.

Capt. Lindley of the National Guard of the State of New York, next read a paper entitled "Tenting on the Old Camp Ground."

PRIDE AND PREJUDICE — TENTING ON THE OLD CAMP GROUND.

BY C. L. LINDLEY.

Captain and Assistant Surgeon 12th Inft., N. G. S. N. Y.

In a short military experience there are two points which have impressed themselves upon me, and which, it seems to me, may be of interest to Army Surgeons. These two matters are not necessarily closely connected, and perhaps should not be made the subject of a single paper. I have thought of both of them a great deal, however, and have condensed what I wish to say, so that my paper will be very brief, short enough, I hope, to command your attention.

One point is this — and I wish to be very careful in stating it — it is the unfortunate way, if I may use the expression, in which some commanding officers regard their medical staff. We are non-combatants, and this may have something to do with the feeling to which I allude. Although a part of the army, we have a separate and additional profession, and are, to a certain extent, reckoned as civilians. Moreover, our profession suffers from a certain indescribable and elusive suspicion on the part of those not enrolled within its ranks. To a certain degree every other profession suffers from the same thing, even lawyers, for you remember the poem expressing a common sentiment, which says that —

> "The devil saw a lawyer killing a viper
> On a sand-hill near his stable;
> The devil did smile, for it made him think
> Of Cain and his brother Abel."

Indeed, the very commanding officers of whom I speak are themselves the subject of more or less stupid criticism on the part of those we are pleased to term civilians.

It has always been so where professions are concerned; and in olden times probably the feeling against doctors has been much more bitter than at the present day. Science has made giant strides, and the patient labor of its acolytes has more and more commanded the respect and confidence of the laity.

You all remember the purple-jowled old colonel who, being urged to drain his camp, replied: "Drain my camp, sir? I'll be damned, sir, if I'll drain my camp, sir!" — a consummation devoutly to be wished. This sort of a boozing, stupid, self-indulgent officer of a hundred years ago, whose privates were "dogs," whose chaplain was a "nuisance," and whose medical man the "scurf" of the earth, — exists no longer; but there still remain, I am sorry to say, men whose minds are narrow and whose bigotry is intense. It may be that we, on our part, are not altogether blameless, and that the high standard reached by some of our profession has not yet become uniform and universal among us.

However we may be regarded, I maintain that the devotion and courage of the surgeon in the army of to-day is equaled by few, and I humbly trust, excelled by none. The importance of his vocation can scarcely be overrated; and to this point, it seems to me, the attention of those commanders who are indifferent or bigoted should be drawn. How this is to be done, I do not know. It is the pride of ignorance, which, like the stopper of the bottle, prevents one from getting at the vacuum beyond. Some sort of a metaphorical corkscrew must be found. We must pull the stopper and get at the vacuum.

It may be that the publication of a series of medical primers with reference to this incapacity or indifference on the part of purely military authorities might accomplish the desired result. We might have, to begin with, a historical primer, marked "A," narrating in simple language the awful results attending Sennacherib's invasion; and which, after reciting Byron's beautiful poem, might wind up with the suggestion that, if the army of that ancient potentate had been properly supplied with medical assistants, the fatal result might have been postponed, or altogether obviated. Primer "B" might recite Cæsar's loss by disease in Germany. Primer "C" might come down to more

modern times, and show how Gustavus Adolphus lost sixteen thousand men in one month by sickness, and only one thousand by the enemy. As this, however, was about the time that Dr. Sangrado was practicing in Spain, it may be best to avoid this period and resume (after Gil Blas had been read and understood) with the expedition of the English to Wallachron, in 1809, which expedition lost thirty times as many by disease as were killed by the enemy. Of course, the argument is simple, that if, after the officers have succeeded in getting their recruits and drilling them into fit and proper shape, and making soldiers of them, they are to die before even reaching striking distance of the enemy, it is reasonably useless to enlist them.

Then, again, there might be a set of statistical primers; and the attention of commanders might be drawn to the results of careful medical supervision. For instance, in large clear type, it might be shown that in the last forty years the death rate has fallen in the Prussian army from 16 to 6 per thousand per annum, in the English army, from about 18 to about 9; in the French army, from 15 to 9½; in the Russian army, from about 37½ to 18; in the American army, from 26 to 13. That is to say, has been literally cut in two.

This, of course, means that the army of to-day, under the skillful treatment of its medical advisers, does not — to quote verbatim from II Kings, 19 Chap. and 35 verse — arise "in the morning, and behold they are all dead corpses," as happened to the stationary camp of the unfortunate Sennacherib. (This quotation shows two things: First, that the translator to whom we owe our version of the good Book, was evidently born in Ireland; second, that even in those days, stationary camps were lethal.) On the contrary, our armies are not only brought into the field by their commanders, but are preserved as efficient soldiers, to meet the enemy in actual combat, by the skill of the medical adviser.

Nor is this all. Think of how much the reduction in the sick list means! It means not only, in the case of the American army, thirteen more efficient men in each one thousand; but it also means a vastly smaller number of men taken away from effective work to care for the sick, and a vastly smaller amount of trans-

portation for the impedimenta necessary to their comfort. The modern army cares for its sick, and is incumbered by them. This calamity was not felt in so great a degree by the armies of the older world, as they had a more simple and expeditious method of dealing with the victims of disease.

They allowed them to die; which shows that the ancients evidently appreciated the truth that a thousand men upon the sick list cripples an army very much more than a thousand killed. Hence the proverbial expression,— common enough, doubtless, in Cæsar's time,— concerning the "survival of the fightest."

I have hitherto been speaking of the result of modern medical methods upon the soldier before,— or rather under other circumstances than in actual engagement; but I gravely doubt if there is any one who has seen the dreadful and demoralizing effect upon all the men engaged, of bad stretcher and ambulance duty, who will hestitate to entreat and urge all possible care and attention to the details of these duties.

It may be that careful commanders can be brought, without much trouble, to appreciate the good work done by us in times of inaction. It seems a little difficult, now and then, to impress upon them the desirability of having a well organized, well drilled and well filled ambulance corps. No soldier can fight with as good pluck, cheerful determination, and concentrated enthusiasm, when his friend, who has stood by him in the ranks, lies wounded and groaning at his side. No body of men, surrounded by their wounded comrades, conscious that if calamity happens to them they also will lie unattended, can fight as well as they would if a vigilant and prompt ambulance corps were efficiently performing its duty. A lieutenant once said to me that he was actually obliged to change his position, because the sight of a man near him, with half his head shot away, was utterly demoralizing to him. How much worse if the poor fellow had been frightfully mangled, and lay groaning at his side!

Therefore, the necessity is painfully apparent of quickly removing the wounded, — not only for their own sakes, but for the sake of preventing their comrades from becoming demoralized; and if the men realize that when wounded they will be promptly and kindly taken care of, — I cannot say that the dread of

calamity is mitigated, but I can say that the horrible result of the sight of their comrades' suffering is prevented.

At the battle of Bunker Hill, the sight of the first few men who were wounded demoralized the volunteers more than the charging British column. Indeed, the advancing enemy acted as a nerve tonic.

It does seem strange that captains of the National Guard should now and again apparently show so much reluctance to send good men to the surgeons for their department; and I do not believe that, when the matter is properly brought to their attention, this unfortunate condition of affairs will longer exist; for I have to say, in behalf of our citizen soldiers, that they bring the same intelligence to their military tasks and duties which they use in their daily occupation; and we, the surgeons, have only to succeed in placing the matters of which we have a right to complain distinctly before them, to have the trouble remedied.

Now, it seems to me that we of the medical profession have two duties: First, of course, the care of the sick; second, that great prophilactic, the education — if I may use the term — of *generals, colonels and captains;* that is to say, the duty of placing clearly before them, and in the right light, their duty concerning the medical care of their troops. And, indeed, our duty may go further yet. What I mean is, that we should, so far as in our power lies, instruct the troops themselves in those simple and plain lines of hygiene which not only add to their comfort, but prevent their ill health.

It is not, I maintain, so much the business of the surgeon to care for those stricken in conflict, as to bring the whole army into engagement in the highest state of physical well being. Engagements, thank Heaven, are occasional; but the army, like the poor, have ye always with you.

And this brings me, more nearly than I at first expected, to my second point, which is this: That there is a vast amount of time and energy wasted by the medical staff in the vain endeavor to render standing camps healthful.

History shows that there never has been anything invented so destructive to human life and health as a standing camp. And

yet the practice of standing camps maintains and obtains to this day. Even the sheep herders in our Western plains continually move the sheep corrals. They have been taught by experience that if they would make money out of sheep they must keep the scab out of the flocks. Even the sheep herders of Sennacherib's time knew this; but he and all other commanders of armies have not yet learned what those old sheep herders already knew. Warriors may yet derive great knowledge from the much despised and peaceful sheep.

It is almost impossible to prevent disease in a standing camp; and there are many diseases which, once started, cannot be eradicated from a standing camp. I may be wrong; but it seems to me that to remove the troops would not cost one-half the money that it costs now to ineffectually drain, disinfect, deodorize, — everything but to abolish a standing camp. After a campaign in Zululand, it appeared to me that the surest means to keep the troops in good health was to keep them constantly moving. It was sometimes difficult to do this; for those who have been campaigning know well how, in a standing camp, one accumulates the small comforts of life, such as board floors for tents, improvised tables and chairs, etc., etc.; and unless it is absolutely necessary to move, officers are loth to give up these rude comforts, although disease may be taxing all the ingenuity of the medical men to face it, — and this, too, without very good results. A camp being moved, even a few miles, as has often been suggested, mitigates the evil to a certain extent; but after remaining in the new camp for a few days, the disease seems to accumulate its original force. Then it is that constant marching will do everything towards stamping out the disease and putting the troops in perfect condition.

In support of this theory, I might cite the beneficial effects of removing a diphtheria patient from room to room to escape re-infection from surrounding objects impregnated with the poison. No doubt all of us have seen cases of diphtheria where, after thinking that the patient has completely recovered, the membrane has re-appeared; and in our wisdom we have told the friends that the disease recurred because the vitality of the patient had been overcome by a proliferation of the germs of the disease, and therefore

the relapse. But if we stop to think, is it not possible that the patient, having completely recovered, may have had a secondary infection, or, as some have seen, even a third infection? Why, then, in cases of typhoid fever and dysentery, which are so common in armies, is it not better to keep the men moving from camp to camp, in order to effectually flee from the disease?

Troops landing in Natal after a very pleasant voyage from England, in a perfectly healthy condition, marched to the front, a distance of two or three hundred miles and remained in the same healthy condition until going into a standing camp on their arrival at the front. Then, after about six weeks, although the country is as free from disease as any spot on earth, and although the water supply, the food, and the clothing of the troops was all that could be desired, typhoid fever and dysentery were sure to appear, only to disappear when the line of march was once again taken up.

I may here digress to say that the dysentery occurring in the troops in South Africa was not due to bilharzia hæmatobia, which was a very common cause of dysentery occurring amongst troops in the northern part of Africa, although this enterprizing colonist of human cavities is met with in South Africa, and many of the natives suffer from it.

To return to the subject of moving troops: Even the sick, in the cases above mentioned, who were transported with the marching columns, did a great deal better than those who were left at the base hospitals; and it is a curious fact that those suffering from inflammatory rheumatism, the sight of whose agonies on first being moved would have brought tears to the eyes of the hardest-hearted, improved with each day's march, and recovered in a very much shorter time than those did who were left in hospitals.

To my mind, it would seem that the soldier who is kept constantly moving is much like the athlete who is in steady training. The veteran who followed Grant towards Richmond was a better man than the militiaman who was hastily called to meet Lee's victorious troops as they pressed into the heart of Pennsylvania. Compare any man after a season of inertia, and the same man with exercise and work enough to keep his muscles tense and his

digestion in good shape! Which does the commanding officer prefer for an engagement, — the hardy marching regiment, or an atrophied lazy regiment fresh from garrison duty? In the Zulu war there were three columns engaged. Two were known as fighting columns, and the other was known for its inertia — the latter column furnished a very much larger percentage of sick than did the fighting columns. It was the impression of all the surgeons that had this column been as actively employed as the other two, their sick list would have been no greater, because they occupied an equally healthy part of the country.

Every man is apt to ride his hobby to death; all to the great discomfort of those who are forced, through politeness, to endure his society; and although I am not so far demented as to think that a fractured thigh and a case of typhoid fever threatened with perforation, will be benefited by jolting over rough roads, yet I feel very strongly the waste of time and human life in endeavoring to stick it out in an unhealthy camp, while the surgeons are temporizing by digging drains, disinfecting blankets, wasting antiseptics and otherwise battling with an enemy — an enemy, gentlemen, by no means so fleet of limb as even the snail-like army column. Where disease is concerned, the man was right who said his legs were too well trained to stand by and see his body abused.

I hope I have not wearied you. I have been as brief as possible, but I trust not too brief. Believe me, these two matters of which I have spoken are — to me, at least — intensely important. I think we owe it to our profession, as physicians, to make its value in military life clear to others; and to our profession as National Guardsmen we also owe the duty of improving its medical service so far as in us lies. Under Providence, I trust that ambulance organizations in the National Guard may never be called upon for active duty in the field. That they perform all duty short of this in an apparently satisfactory manner should not lull us to supineness. Were the last dreadful test applied, I fear those same ambulance organizations would be found wanting, — wanting, to our shame, — for we, and not our commanding officers, will be responsible for the calamity.

I have seen, in an engagement, stretcher-bearers utterly de-

moralized; some fighting, and some trying to hide under their stretchers, simply because there was no officer whose especial duty it was to keep them at their work. The surgeons, in this instance, had to spend a great deal of time in finding the men and making them bring out the wounded. Thus valuable time was lost and undoubtedly also valuable lives.

I believe, — and I here urge my belief upon you — that there is a great lack in not having a more complete organization of the medical department of the National Guard, with a non-com. staff, each man of which has his duty well defined, and in which duty he has been so thoroughly drilled that, even in the face of that frightful music of the battle field, he will perform it unflinchingly.

Let me sum up:

First. Make clear to your officers your title to their confidence and co-operation.

Second. Discourage the payment of the awful toll demanded by stationary camps.

It is cheaper to move than to pay rent.

The President announced the names of members appointed on Executive Committee, for the ensuing year, as follows: —

Gen. J. D. Bryant, Surgeon-General N. G. S. N. Y.
Gen. J. D. Griffith, Surgeon-General N. G. Mo.
Lieut.-Col. H. L. Burrell, Medical Director M. V. M.
Maj. L. C. Carr, Surgeon Ohio N. G.
Maj. C. F. W. Myers, Surgeon N. G. N. J.

CAMP REPORTS.

BY JOHN B. EDWARDS,

Major and Surgeon 3d Inf., Wis. N. G.

The subject of this short paper is of some importance to every regimental surgeon in the National Guard, and is one that I imagine has commanded more or less of the attention of every one of them.

The surgeons of the Wisconsin National Guard have had the same experience, probably, that all others have had, where the State troops were in process of evolution from the old militia system, to the present National Guard organization. I shall take our State as a good illustration of what has been, and shall take the liberty to indicate what it appears to me should be done to farther perfect our "Camp Reports," hoping that it will open a discussion that must benefit a great many of us, especially those who are in States where the Medical Department is considered of minor importance. My experience commenced as Assistant Surgeon of the Third Wisconsin National Guard June 11th, 1883; at that time the only camp report made by the surgeon was after the week's tour of duty was completed, and was made directly to the Colonel.

In 1885 or 1886, I have not the exact date at hand, orders were issued by our Adjutant-General, that a medical officer of the day be appointed each day of the camp service, and that he make a daily report. Our regiment received this order two days prior to going into camp, and of course we hardly were prepared, by the time it was necessary to make our first daily report; when application was made for blanks to the Quartermaster's Department they had none and had never heard of such a thing.

After a great deal of talk with every officer of the field and staff it was plain that none of them knew anything about how the reports were to be made, and application to a regular army officer did not make matters any better; at this critical period it was discovered that Capt. Grannis, Assistant Surgeon of the regiment, had found a book published in 1862, entitled "A Handbook for the Military Surgeon;" in it a blank marked "Morning Report of Surgeon" was taken as about what we needed and used.

In the Surgeon's final report for that camp, it was recommended that the proper blanks be printed by the State for the Medical Department, and be distributed to the several National Guard organizations. The next year the State did issue the same Morning Report of Surgeon's blank and there the interest in the matter at headquarters apparently ended.

Unfortunately, until last year the Medical Department of

Wisconsin National Guard was not considered of much importance. I think the fact that such an opinion obtained was directly their own fault. The regimental surgeons had made no effort to improve the service, for they all waited for the move to come from headquarters, and as there was no particular interest taken in the matter there of course nothing was done, until after the appointment of our present Surgeon-General. He has most effectually stirred matters up.

I was informed not long ago that the Quartermaster's Department was prepared to furnish almost anything the Medical Department asked for; or as the answer came, "Oh, yes, you doctors can have the world now if you ask for it; just make out a list of what you want and you will get it." When I asked about blanks: "Just make a requisition of what you want with samples and it will be printed for you; you can have a book printed if you want it." The present indications are that we will go into camp this year, with a definite idea of what reports will be required of us, and with the proper blanks issued, upon which to make them. This will be very gratifying to us, as we have not been considered of enough importance heretofore to be worthy of attention.

The medical officer's camp reports should cover everything pertaining to the hygiene, and condition of health of the troops, and any peculiarities or conditions of the camp, or the grounds that could affect the same.

The food and the preparation of it should also be considered, and any recommendations should be made by the reporting surgeon that in his opinion would benefit the service.

In looking for help to determine what would be the best system of camp reports to adopt, it strikes me that we should naturally turn first to that never failing friend of the National Guard, the Regular Army.

Through the kindness of Capt. Mearns, of the United States Army, I obtained, last August, copies of blanks used by him in his department.

There is, first, a "First Sergeants Daily Sick Report," in book form; of course each First Sergeant has a book. It consists of, first, entries made by the First Sergeant, name of patient, rank, date when taken sick, whether injury or sickness was incurred in

the line of duty; this is signed by the commanding officer of the company. Upon the same blank the Surgeon states nature of injury, whether sick in quarters or hospital, of what duty capable, when sick in quarters, and the date when patient was returned to duty, discharged, died, or was otherwise disposed of.

Next comes the Surgeon's morning report which gives the number remaining in hospital and in quarters at last report, those taken sick since last report, the total in hospital and in quarters, the number returned to duty, discharged or died, those sent to general hospital, those sent to their regiments, and finally those remaining in hospital and in quarters.

An important form or blank, and one that should be here mentioned, is the "Register and Prescription Book," kept by the hospital steward. It gives the number, name of patient, rank, service, disease, whether in hospital or quarters, and the prescription, with any remarks that may be necessary.

These blanks would, I think, be about what we require, with probably some alterations and modifications.

In the Surgeon's morning report blank the columns for discharged, died, sent to general hospital and sent to their regiments could be dispensed with in our service. Possibly the discharged and died columns might be needed, but, I am happy to say, they never have been in my experience.

I made an effort to get blanks from other States that would be of service to us in this discussion, but unfortunately I have not succeeded. In at least one instance the blanks were ordered sent to me, but I have not received them.

If the medical officer of the day in his report gives the condition of the camp ground and camp, and of the troops upon their arrival, the Quartermaster's supplies, especially the bedding and rations, the efficiency of the cooks, and their assistants, in fact make every daily report cover everything, even to such suggestions as the reporting officer might think would be of benefit. Then the Surgeon's final report of his department for the week's camp would be complete, and I think of vastly more importance than it ever has been in at least one instance, that of my own regiment.

DAILY SICK REPORT OF COMPANY....., REGIMENT U. S....., FOR ..... 189 .....

Entries to be made by 1st Sergeant, except in column 4.						SURGEON'S REMARKS.			
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
NAME OF PATIENT.	Rank.	Date When Taken Sick.	Did sickness or injury originate in line of duty. Yes or nor.	No. of times reported sick by surgeon during the year.	No. of days on sick report during the year.	Disease or injuries will be entered, whether patient is excused from duty or not.	Whether sick in quarters or Hospital.	Of what duty capable when sick in quarters.	Date when patient was returned to duty, discharged, died, etc.

* I certify that I have carefully examined the above report, and in each case have expressed my opinion, formed from the best obtainable evidence, as to whether the sickness or injury alleged originated in the line of duty or not.

.....
Capt. (or Lieut.) Company.....

* The examination will be made and the list signed by a commissioned officer of the Company before it is sent to the medical officer. If the Co. officer cannot state whether the alleged sicknes or injury originated in the line of duty he will write undetermined in column 4.

.....
Attending Surgeon.

† Until the disease has declared itself the medical officer will write not diagnosed in column 7.

MORNING REPORT OF SURGEON OF ..... REGIMENT .....

DATE, 189 .	Company.	Remaining at Last Report.		Taken Sick.	TOTAL.		Returned to Duty.	Discharged.	Died.	Sent to Gen'l Hospital.	Sent to their Regiments.	Remaining.		REMARKS.
		in Hospital.	in Quarters.		in Hospital.	in Quarters.						in Hospital.	in Quarters.	

Surgeon.....*Reg.*

FREDERICK L. MATTHEWS, Secretary,
Col. and Surg. Gen'l National Guard, Ills.
Died December 24th, 1891.

Major F. W. Byers next read a biographical sketch of the late Col. Frederick L. Matthews:

BIOGRAPHICAL SKETCH OF THE LATE COL. FRED. L. MATTHEWS, SURGEON-GENERAL N. G. ILLS.

BY FRED. W. BYERS,

Major and Surgeon Wis. N. G.

Col. Frederick L. Matthews, late Surgeon-General of the State of Illinois, and recording secretary of this National Association, will meet with us no more.

The untiring physician, the skillful surgeon, the patriotic citizen, the genial gentleman, the loyal friend and the soldier without fear has received an honorable discharge.

His place in our councils is vacant and our ranks for the first time have been rudely broken by relentless Death.

"His was a character when unfolded, to which men were irresistibly drawn in tribute of a faith and friendship that seemed indeed grappled to his soul with hooks of steel!"

Not long after the organization of this Association, September, 1891, at which meeting his manly face and form became conspicuous, and his services were duly recognized, Col. Matthews was disabled by paralysis, and in company with his wife, soon after went to Southern California.

During his stay there he seemed much improved and apparently had regained his former health. On his way home the train was snow-bound in the mountains for several days and he contracted a severe cold, symptoms of pneumonia following the exposure, and when he arrived at Kansas City grew quite ill, but soon rallied, however, and having seemingly recovered, reached his home in Springfield, Ill., almost well. At home again he promptly undertook professional duties which, doubtless, hastened his death, and on Thursday, December 24, 1891, he passed beyond the River. A Springfield morning paper, of December 28, 1891, published the following: "If evidence had been necessary to attest the high regard in which the late Dr. Frederick L. Matthews was held by our people, the concourse of citizens at Christ Church yesterday, would have been ample.

Never was there a larger congregation assembled there. It was made up of people in almost every station in life, friends of the dead man, who had come to pay the last honors to one whom they respected and esteemed. Distinguished citizens and statesmen were in the audience and among the pall-bearers, one was a former Governor and now U. S. Senator; another a well-known officer of the war for the Union, and ex-Lieutenant Governor of Illinois.

The remarks of the minister, Rev. F. W. Clampett, of Columbus, Ohio, were brief but earnest and eloquent. He referred to the sorrowful manner in which the festivities of the Christmas season had been broken in upon by the death of Dr. Matthews. A strong, stalwart, manly man had been lost to the community—one who had carried himself bravely and well in all of the relations of life. As an officer of the State and city government, and a member of one of the learned and most practical of the professions, as an earnest, consistent and devoted member of the Protestant Episcopal Church, as a conspicuous figure in the social circles of the city and as a tender, true and devoted husband, Dr. Matthews had lived and the success which crowned and rounded out his life was due to his fidelity to every trust reposed in him.

He was a sympathetic, kindly and charitable man, but also a man of the strongest and most positive convictions on all of the graver questions of life, of public weal and religion. These convictions he maintained sturdily in the face of all opposition. A studious, cultured and public-spirited gentleman, his place in the community it will be difficult to fill. As a member of Christ Church from its earliest organization and continuously of its vestry he was always loyal and earnest. The minister paid a touching tribute to the Doctor's devotion to his professional duties, and closed by a tender allusion to the overwhelming affliction of the devoted wife of the deceased."

Frederick Lawson Matthews was born near the city of Ross, Herefordshire, England, in the year 1840. In 1844, he came to America with his parents, John and Caroline (Cooper) Matthews who located on a farm near Sharon, in the Chenango Valley, Pennsylvania. There the boy shared in the labors and amusements,

incident to farm life, that have so frequently given to our country the best type of American citizens. He first attended the common school, afterwards an academy at Hartford, and later Allegheny College in Meadville, Pa. Enlisting early in the war he was captured at Savage Station, Va., June, 1862, and was confined in Libby prison for several months. He was mustered out of the volunteer army in 1863, on surgeon's certificate of disability. After the war he entered Iron City Commercial College, Pittsburg, and graduated therefrom. Soon after coming west he studied medicine at Carlinville, Ill., and the degree of M. D. was conferred at Ann Arbor, in 1867. From Rush of Chicago he obtained the Ad eundem degree A. D. 1869. He was one of the centennial commissioners at Philadelphia, 1876. Surgeon-General from January, 1885, until his death, member of the city council of Springfield, surgeon of St. John's hospital, consulting surgeon of the Wabash and Illinois Central Railways, medical director of the Franklin Insurance Co., a mason of high standing in the order and a comrade of the Grand Army of Republic.

The following tribute is from the pen of Gen. John C. Smith, of Chicago, an intimate friend of the deceased:

DR. FREDERICK L. MATTHEWS.

"There is no death, the stars go down,
To rise upon some fairer shore;
And bright in heaven's jeweled crown,
They shine for evermore."

"So thought I, as the telegram lay before me announcing the death of one I loved as few men love each other. When but a lad Fred Matthews left his school to take up arms in defense of his adopted country and enrolled himself with the famous "Bucktails," of Pennsylvania, with which he did duty in the war for the Union. Removing to Illinois in early manhood, he settled in Carlinville, and began the practice of medicine. Appointed by Governor Palmer the United States Centennial Commissioner to Philadelphia, and by Governor Beveridge a member of the State Board of Centennial Commissioners, he devoted several years to the duties of his trying position, and did much to aid the exhibitors from this State. On the closing of the National Exposition

at Philadelphia, and anxious for an enlarged field for the practice of his profession, our friend took up his residence in Springfield, where he soon became known as a skillful physician and an able surgeon. Appointed by Governor Oglesby Surgeon-General of the Illinois National Guard, he brought to his new position an intelligent devotion and pride in duty well performed, which brought the office into prominence and won for himself the approval of his superior officers. A great student in his profession, he also took deep interest in the sciences, commanding the respect and confidence of all who knew him or came into correspondence with him.

It was in the social circle that one loved him the most, because you there knew him best. His was a bright and happy home, surrounded by every thing necessary to a cultivated mind and a refined taste. Marrying Annie Virginia, the accomplished daughter of Judge James C. Conkling, his home became an ideal one, in which love entered, and companionship was ever prominent. He loved that home; his every thought was of it and of her who did so much to make it enjoyable.

Our friend's life was a model for the young men. Easy of approach, genial in conversation, honorable in all his dealings, and of unquestionable integrity. As a soldier, brave; an official, courteous; and a friend, devoted. Generous toward all, his humanity was of no narrow creed, but embraced all mankind. A Freemason by profession, but a true and courageous Knight-Templar by birth. His sword is now sheathed, his work is ended on earth, and his soul rests in the grand asylum above."

Adj.-Gen. Reece issued the following general order:

It is with profound sorrow that the Commander-in-Chief announces to the Illinois National Guard, the death of Col. Frederick L. Matthews, Surgeon-General of the Illinois National Guard, which occurred at his residence in Springfield, Ill., at 11:40 o'clock p. m., Thursday, Dec. 24th, 1891. Col. Matthews has a most honorable record as a public-spirited citizen and patriotic soldier. He enlisted as a private in Company C, Fifty-seventh Pennsylvania Volunteer Infantry, in September, 1861. Promoted First Sergeant in October, 1861; Second Lieutenant, June 26th, 1862; prisoner of war in July, 1862; paroled and unfit for active

duty, October, 1862. He was a Major in the Union League Regiment (for the protection of Pennsylvania), July 1st, 1863.

Governor Richard J. Oglesby appointed Col. Matthews Surgeon-General of the Illinois National Guard, Jan. 6th, 1885, and the present Commander-in-Chief, recognizing his splendid ability, zeal, patriotism and devotion to duty, re-appointed him at the commencement of his administration.

The military service has lost a noble member, while the Medical Department is deprived of its beloved and respected chief.

The general staff will wear the usual badge of mourning for thirty days.

Theo. Ewert, A. A. G., of Illinois, in a letter to Gen. Senn, dated Jan. 8th, 1892, writes, "that our State Military Service, as well as your Association, has lost in the death of Dr. Matthews, an indefatigable worker, a magnificent, able officer, and a most lovable man. His departure from our ranks has left a void hard to fill."

Physicians Adopt Resolutions.

The physicians of the city of Springfield, assembled by reason of the sad intelligence of the death of Dr. F. L. Matthews,

Resolved, That his sudden and unexpected demise in the prime of life and usefulness was largely due to his devotion to professional labor. That in his death the city has lost one of its most esteemed and progressive citizens, and the community a physician of high attainments. That his long connection with St. John's Hospital had especially endeared him to the poor, who sought that institution for his care and advice. That we, his colleagues, appreciate his enthusiastic and self-sacrificing labors in the profession, and that we attend the funeral in a body as a mark of our sympathy aud esteem. And we sincerely condole with the wife and family of the deceased in their great bereavement, and that a copy of these resolutions be furnished the family of the deceased and the daily papers for publication.

"The Franklin" an insurance quarterly, says:—

"The resolutions passed by the Board of Directors of Franklin Life Association, at their meeting, on account of the death of Dr. Matthews, our Medical Director, are most proper and timely;

and yet to the casual reader they convey but a little of the warm esteem and high regard in which Dr. Matthews was held by his associates in the management of this company. He was a man who was always genial, always pleasant, and during the long years of his business connection with this company, we never saw his brow ruffled by worry or impatience. His entrance into our work room was always an event with both officers and clerks as he invariably brought with him a cheerful countenance, clearing the atmosphere with his jocular words and sunny presence. He was a loyal friend and a hard worker. Dying as he did on Christmas eve his death cast a shadow over our hearts that even the glad Christmas morn could not dispel, and yet what is our loss, we have assurance, is his gain, and with this assurance we can but bow to the edict of Him, 'Who doeth all things well.'"

Longfellow's stanza says truly:

> "There is a reaper whose name is death,
> And with his sickle keen,
> He reaps the bearded grain at a breath;
> And the flowers that grow between."

The grim reaper who gathers golden grain in all seasons has invaded our ranks to strike down one who had few equals and no superiors. His place is vacant, his work is done; he sleeps that "sleep which knows no waking." He rests within the borders of that prairie State, where also lie buried Lincoln and Douglas, the statesmen, Brainard, Blaney and Johnson, of the medical profession, the great surgeons and physicians of the Northwest. This reaper is not daunted by station nor careful of feelings. He is utterly regardless of the crying need there may be for a man, his brilliant acquirements, the usefulness of his position, the void his death will create, *relentless* and immovable as a heart of marble, he moves among men and summons them away.

Col. Frederick L. Matthews is gone. * * *

As a friend he was true and generous, as a gentleman the soul of honor, as a soldier he was prompt and obedient, as a member of our profession conscientious and self-sacrificing, in military matters generally earnest and enthusiastic.

An officer of the United States Army, now retired, once said in

eulogy of a companion surgeon: "The soldier who perils life in defense of his flag finds honored respite when the war is over and the victory won. The physician summoned night and day to battle with the common foe of weak humanity, knows no hour of immunity from danger. Peace that hath her victories no less than war bears every possibility of triumph to him whose chosen lot is to do and dare for *fellowman*, yet links with golden opportunity peril and exposure equal to those of many a battlefield. The soldier has his years, perhaps, of peace and safety. The physician knows no moment when, through pestilence, contagion or exposure his life may not be the sudden forfeit.

"The soldier may sometimes be the physician. The physician must ever be the soldier." Col. Matthews was the embodiment pre-eminently of the soldier-surgeon both in the war for the Union and in the National Guard of the United States. It is a privilege to write in praise of such a man — of such a product of Western, nay, American manhood, of such an adopted citizen of this Republic. It is more than military boast to be intimate with such a manly man, with such a noble friend, honored in State, in our profession and in society; yet ever modest in his preferment.

He is *gone*. Suffering humanity with us will feel the void.

The great and noble profession he so adorned will miss him and we may well stand silent and humbled when we think that he who had met and conquered death so many times for others, who was fully armed with every weapon which could ward off from man the arrows of the destroyer, to whom so many grateful hearts among poor and rich turned as their preserver from a premature grave should have been forced to throw down his arms and surrender to his relentless and victorious enemy.

To his devoted and sorrowing wife the heart-felt sympathy and sincere condolence of the members of this Association will be tendered, and may, "He who 'tempers the wind to the shorn lambs,'" comfort her in her great bereavement.

And now that an untimely death has removed our professional associate and military companion let his memory claim the tribute of a tear as we inscribe the name of Col. F. L. Matthews, the first on the roll of *our dead*.

IN MEMORIAM.

Fellow-Officers: We are called upon to mourn the death of our late Comrade, Capt. John Thaddeus Eggers, M. D., Surgeon of the Third Regiment, N. G. M. In doing so, it is befitting that we should place on record a short sketch of his life and career.

He was the son of Mark and Sophronia Eggers, was born at Lockridge, Iowa, in 1856, making him in his thirty-sixth year when he died. He received his early education at the public schools in his native town and at the age of fourteen went to Wilton Seminary, where he studied about two years; from there he went first to Iowa Wesleyan University and then to Hillsdale College, Hillsdale, Mich. His next step was to go to Chicago, where he read medicine under Dr. Morh and attended lectures at the "Rush Medical College" from which he graduated in February, 1881. While in Chicago, reading under Dr. Morh and attending lectures, the late Dr. Eggers edited the book on "Physical Diagnosis" by E. Flecther Engles.

In 1881 he came to Kansas City, after a trip to the Pacific coast, and took an active part in organizing the University Medical College, and was elected "Demonstrator of Anatomy." In 1886 he was given the chair of "Anatomy and Clinical Surgery" and also chair of "Surgery and Anatomy" in the Western Dental College. He was also about this time made president of the Jackson County Medical Society. He was taken violently ill November 25th, 1891, with uræmic convulsions and was very low for three weeks, but at the end of this time his improvement was so great, that it was hoped he would recover. This however was not to be, and February 16th, 1892, he was taken with his final illness and died on the 21st inst., after five days suffering.

His was commissioned on April 11th, 1889, Captain and Assistant Surgeon of Third Regiment, N. G. M., Kansas City, Mo., with rank from March 30th, 1889, from which time, till his death, he was the honored and trusted medical adviser of the young men of the regiment. Knowing him as a fellow-officer, the speaker can bear testimony of his popularity with the men with whom he was associated. In the societies, in civil life, he was known as a worker, and reputed for his accurately classified knowledge.

JOHN THADDEUS EGGERS,
Captain and Assistant Surgeon, N. G. Mo.
Died February 21st, 1892.

In all his relations in life, candor and integrity were his leading characteristics. The guiding star of his manhood was "Truth," and the Argent motto on his shield was "Right." And while his sun of life has set, it has left a golden twilight of fond recollections entwining his memory, that will long be cherished by his many Comrades.

Maj. Barkwell then offered the following resolution: —

Resolved, Impressed with the fact that the interests of the service demands a systematic examination of recruits before entrance into the ranks of the National Guard, this Association respectfully recommends to the Commander-in-Chief of the several States, the following:

That a physical examination of State troops is a necessity, in that —

1st. That it will secure for the State able-bodied men and its protection against fraudulent claims.

2d. The eventual improvement of the *esprit de corps* of organizations, by establishing the principle, that only *sound* men can be members of the National Guard.

3d. The knowledge of the civil authorities, that when they call upon the reserve strength of their State for the enforcement of laws, they will not be leaning upon the staff of a broken reed.

Adopted.

The Committee on Resolutions on the death of Capt. J. T. Eggers, made the following report: —

Whereas, after a severe illness of eighteen months, of Bright's disease, Capt. John T. Eggers, 3d Regiment National Guard, Missouri, came to his death at his home in Kansas City; therefore,

Be it Resolved, That this Association expresses its pro-

found regret and sincere sorrow, and that it feels it has sustained a loss in his death.

Respectfully submitted,

MAJ. M. C. BARKWELL,
GEN. SCOTT HELM,
MAJ. L. C. CARR.

MAJ. HALLEY: I move that a copy of this resolution be transmitted to the family of the deceased, at Kansas City, Mo.

Adopted.

Gen. Senn offered the following resolution: That a copy of the memorial sketch read by Maj. Byers be forwarded to the widow of our deceased Secretary, and also embody in the same resolution, that Maj. Halley be appointed a committee of one to transmit a copy of the resolution to the family of Capt. Eggers.

Adopted.

Gen. Senn at this point takes the Chair and announced that the Association was ready to receive the report of the Committee on referred papers.

REPORT OF COMMITTEE ON PRESIDENT'S MESSAGE.

MR. PRESIDENT AND GENTLEMEN: The Committee that were appointed to take action and make recommendations on the message of Gen. Senn, President of this Association, have the honor to make the following report:—

1. It is respectfully recommended that the Surgeon-Generals of the respective States and Territories are hereby requested to endeavor to organize State and Territorial organizations in their department, for the purpose of discussing matters pertinent to the aims and objects of the Association of Surgeons of the National Guard, these Associations being subject to the rules and regulations of the National Association.

It is further recommended that the corresponding Secretary of

this Association be instructed to conduct the necessary correspondence to carry this recommendation into effect.

2. It is further recommended that the Military code of the States and Territories be so amended as to make the Medical Corps separate and distinct department.

3. We further recommend that the Legislatures of the various States and Territories be memorialized to require a competitive examination of all candidates, either for appointment or promotion in the Medical Corps.

4. It is further recommended that the uniform of the medical officers of the National Guard shall be that of the staff corps of the United States Army, with the exception that the letters in the ornament on the fatigue cap and the saddle cloth shall be those designating the Guards of the respective State.

5. It is hoped that the medical officers of the National Guard will interest themselves in original research in subjects pertaining to the Medical Department.

6. It is further recommended that the following memorial be presented to Congress:—

WHEREAS, the organization of armies and the care of the soldier in time of peace as well as in time of war necessitates the highest order of professional and administrative ability in the medical officers intrusted with their physical welfare; and

WHEREAS, The General Government has properly and liberally provided for the technical education and the maintenance of the officers of the line of the Army and Navy, and

WHEREAS, the medical officers of the Army and Navy under the present regulation of necessity must bear the expenses of their medical education, and upon their entrance into the Medical Corps find themselves totally unacquainted with the technical forms and method of procedure for the proper conduct of their different duties; and

WHEREAS, it is an acknowledged fact that in case of war it would be necessary to supplement the standing army of the United States by the services of the National Guard of the United States, thus calling into the field a large body of medical men totally unacquainted with the many forms for the proper conduct of their official duties; therefore, be it

Resolved, That the Association of Military Surgeons of the National Guard of the United States respectfully petition Congress to establish at some central point affording proper clinical advantages, a National Military Medical school, where men selected under proper regulations for admission to the Medical Corps of the United States Army, can be educated at the expense of the General Government, this school also affording opportunity for post-graduate instruction for the Medical Corps of the Army; and be it further

Resolved, That to make this school of as great general benefit as possible, it is recommended that it be thrown open to the medical officers of the National Guard of the United States for post-graduate instruction; that in case of war the General Government may have at its service a properly instructed and equipped body of medical men, thereby saving the lives of thousands of men necessarily sacrificed in the effort to organize and systematize a competent corps of medical men; and be it further

Resolved, That the Surgeon-General of the United States Army be requested to present to your Honorable Body a scheme for the organization of such a school.

7. In view of the fact that the eyes of the world will be turned toward Chicago in the year 1893, it is recommended that a determined effort be made to organize an International Congress of Military Surgeons to be held in that city during that year, and further that a committee of seven, consisting of the President of this Association as Chairman and six other active members to be appointed by him, be constituted a Committee of Organization with full power to act. This has been considered by your Committee as one of the most important suggestions thrown out in the exhaustive and valuable message of President Senn. Feeling as we do, that it will result in illimitable advantage toward the advancement and upward progress of the Medical Corps of the National Guard of the United States.

C. M. Woodward,
Scott Helm,
T. C. Clark,
Herbert L. Burrell.

REPORT OF COMMITTEE ON MAJOR GIRARD'S PAPER.

The Committee to whom was referred the recommendations made in the paper read by Maj. Girard of the United States Army, relative to the offering of a prize for the best compilation of "Rules and Regulations" for the Government of the Medical Department of the National Guard of the United States, would respectfully recommend that a suitable prize be offered for the same and that a Committee be appointed by the Chair to consider the matter of such prize.

C. M. WOODWARD,
SCOTT HELM,
T. C. CLARK,
HERBERT L. BURRELL.

On motion of Maj. Carr the report was adopted.

The chair appointed the following Committee on International Congress of Military Surgeons: —

Gen. Nicholas Senn, Ills.; Col. Chas. R. Greenleaf, U. S. A.; Gen. J. D. Bryant, N. Y.; Gen. Thos. Kittredge, Mass.; Gen. Scott Helm, Arizona; Maj. W. A. Leigh, Kans.; Capt. W. Fitz-Hugh Edwards, Mich.

The chair selected the following Committee on Prize as recommended in Maj. Girard's paper: —

Col. H. L. Burrell, Mass.; Maj. Charles Hayes, R. I.; Maj. Wm. H. Egle, Pa.

MAJ. CARR: I have two resolutions to offer, that will take but a few moments. The first is:

WHEREAS, The Honorable Secretary of War and the Surgeon-General of the United States Army have been most kind and considerate to this Association and shown a desire to aid them in every possible manner;

Therefore, be it Resolved, That the thanks of this Associa-

tion be tendered the above named gentlemen, and that Lieut.-Col. C. R. Greenleaf be requested to convey in person this expression of our sentiments.

(Signed) GEN. SCOTT HELM,
MAJ. L. C. CARR,
MAJ. M. C. BARKWELL,

The second resolution is:

WHEREAS, Our reception by the citizens of St. Louis has been not only hospitable but royal. Their good feeling being evidenced, and their generous will being faithfully executed by—

Mr. A. C. Stewart, Chairman of the Citizens' Committee.

Mr. Wm. M. Tamblyn, Chairman of the Committee on Finance.

Mr. Frank Gaiennie, Chairman of Committee on Entertainment, and our esteemed brother member, Col. Eustathius Chancellor, Chairman of Committee of Arrangments; and

WHEREAS, the Press of the city of St. Louis has been quick to recognize what this Association deems an essential as well as a laudable object, and has treated us, not alone with fairness, but with extreme courtesy, thus materially aiding this Association in the good work it has begun; and

WHEREAS, Lieut.-Col. Chas. R. Greenleaf, U. S. A., and Maj. John Van R. Hoff, U. S. A., detailed by the War Departmont; Col. C. S. Alden, U. S. A., and Maj. A. C. Girard, U. S. A.; Capt. L. A. LeGarde, U. S. A., and Capt. C. B. Ewing, U. S. A., have been most painstaking in their efforts to aid this Association.

Therefore, be it Resolved, That to them, one and all, we offer our sincere thanks and beg to assure them that the

remembrance of our St. Louis meeting will be fraught with the most pleasant memories and happiest thoughts; thus stimulating us to renewed effort, with redoubled energy.

And, be it further Resolved, That a copy of these resolutions be furnished to the daily journals of this city, and also spread upon the minutes of this Association.

(Signed) MAJ. L. C. CARR,
COL. SCOTT HELM,
MAJ. M. C. BARKWELL.
Committee.

The resolutions were unanimously adopted.

The Auditing Committee, composed of Maj. Geo. Halley and Lt. Ralph Chandler, reported that they had found the books of the Association correct.

CAPT. MANN: I move you, sir, that the Chair be authorized to appoint a suitable number of members to constitute a Committee on Transportation.

Adopted.

The Chair selected the following Committee on Transportation: —

Maj. Lawrence C. Carr, Ohio; Col. Louis W. Read, Pa.; Maj. M. C. Barkwell, Wyo.; Col. C. M. Woodward, Mich.; Maj. T. W. Miller, Ills.; Maj. Nelson H. Henry, N. Y.: Gen. J. D. Griffith, Mo.; Capt. Arthur R. Jarrett, N. Y.

GEN. SENN: Before we adjourn I would be pleased to have Col. Greenleaf, the Honorary President of this Association, make his appearance on the stage, and I appoint Maj. Girard as a Committee of One to conduct Col. Greenleaf.

On the appearance of Col. Greenleaf on the stage, he was warmly received by the audience, and Gen. Senn said: I have the honor to introduce to you Col. Greenleaf, our Honorary President, of Washington, D. C.

COL. GREENLEAF: Gentlemen, I hardly know what to say; I was not aware that this distinguished honor had been bestowed

upon me; I sincerely thank you for it, and in doing so, should apologize for my appearance here in civilian's clothes, and not in the uniform of an officer, but my heart is with you and I can assure you, that I repeat and bespeak the words of the Surgeon-General of the Army, in his ardent appreciation and desire to aid your Honorable Body. He is desirous of your success, and I feel confident will do all in his power to assist you. I thank you, gentlemen, very much for the honor you have conferred upon me.

Maj. Carr: In my judgment there should be a Committee appointed, to whom the papers to be read at our next annual meeting should be referred, so that we would have a perfect system of control of these papers, and I make this in the shape of a motion.

Adopted.

The following Committee was appointed by the chair, who would assume control of papers to be read at third annual meeting.

Maj. A. H. Briggs, N. Y.; Col. E. Chancellor, Mo.; Maj. H. E. Bradley, Wis.

An adjournment was then taken, to meet in Washington, D. C., May, 1893.

After the adjournment of the Convention, carriages were in waiting to convey the members and friends to Tower Grove Park, Shaw's Garden, and from there to the Jockey Club, where a sumptuous banquet was given by the citizens of St. Louis, lasting from 3 until 6 p. m.

Mr. Frank Gaiennie as toast-master, filled the position admirably, to the delight and entertainment of all. During this enjoyable feast, and while mirth and contentment reigned supreme, Gen. Senn called the assembly to order, and in a choice speech presented Col. Greenleaf an official badge of the Association, which was modestly received and responded to very happily.

APPENDIX.

CONSTITUTION AND BY-LAWS OF THE ASSOCIATION OF MILITARY SURGEONS OF THE NATIONAL GUARD OF THE UNITED STATES.

PREAMBLE.

We, the undersigned, Surgeons of the National Guard of the United States, in order to promote and better the science of Military Surgery, do hereby agree to associate ourselves together and be governed by the following

CONSTITUTION.

ARTICLE I. The organization shall be known as "The Association of Military Surgeons of the National Guard of the United States."

ART. II. The Association shall meet annually, the time and place to be fixed at each meeting for the ensuing meeting.

ART. III. Thirty-five (35) members shall constitute a quorum for the transaction of business, but any number of members may adjourn from time to time.

ART. IV. The Officers of this Association shall consist of (I) a President and an Honorary President; (II) a 1st and (III) 2d Vice-president; (IV) a Secretary and (V) a Corresponding Secretary; (VI) a Treasurer and (VII) an Executive Committee to consist of five (5) members to be appointed by the President at each annual meeting and to whom shall be referred all executive business not otherwise provided for in this Constitution or By-laws.

ART. V. The President, Vice-president, Secretary and Treasurer shall be elected annually, at the annual meeting, and shall hold their respective offices for the term of one

year. All officers elected by the Association shall hold their respective offices until their successors are duly elected.

Art. VI. The President shall preside at all meetings, give a casting vote when necessary and perform all other duties that custom and parliamentary usage may require. He may call special meetings at any time, as he may deem necessary.

Art. VII. In case of absence or inability of the President to discharge his duties the latter shall devolve upon the Vice-presidents in the order of their election.

Art. VIII. The Secretary shall record the minutes and authenticate the proceedings of the Association, preserve all records, books and papers belonging to the Association, and at the close of his term of office, shall lay before the Association a full report of his official work.

Art. IX. The Corresponding Secretary shall give due notice of all meetings and conduct the correspondence of the Association, and shall perform all other duties which usually devolve upon that office.

Art. X. The Treasurer of the Association shall collect all dues, and pay all just claims against the Association from the funds of the Association, and he shall keep a record of all receipts and disbursements, and at the close of his term of office shall lay before the Association a full report of all matters pertaining to his office.

Art. XI. *Membership.* — Any Commissioned Medical Officer of the National Guard of the United States may, on application and presentation of the proper credentials to the Secretary of the Association, and upon payment of the initiation fee, become an active member of this Association, and shall retain his membership and rank should he honorably sever his connection with the National Guard, upon payment of his annual dues.

Art. XII. Any member of this Association who may be

dismissed from the service for conduct unbecoming an officer and a gentleman shall, when positive proof is furnished the Secretary of this Association, be expelled therefrom, and debarred from any further rights or privileges in the Association.

ART. XIII. The Association may elect Honorary Members. Any man who may have been in the Medical service of the National Guard, or in the Medical department of the Regular Army or Navy, or in that of the National Homes for Disabled Volunteers, or any distinguished Military or Naval Surgeons, from any part of the world, shall be eligible for Honorary Membership and may be made such by a majority vote of those present at any regular meeting. Honorary Members shall not hold office.

ART. XIV. The Initiation fee of the Association shall be five dollars ($5.00) and the annual dues two dollars ($2.00).

ART. XV. No Amendment shall be made to this Constitution except by a three-fourths vote of all the members present at any annual meeting.

MEMBERS OF THE ASSOCIATION OF MILITARY SURGEONS OF THE NATIONAL GUARD OF THE UNITED STATES.

*Surg.-Gen. N. Senn, Chicago, Ill.
*Surg.-Gen. F. L. Mathews, Springfield, Ill.
Capt. C. W. Leigh, Chicago, Ill.
Capt. W. W. Wilson, Wausau, Wis.
Major T. C. Kimball, Marion, Ind.
Surg.-Gen. C. A. Wheaton, St. Paul, Minn.
Surg.-Gen. F. J. Crane, Denver, Col.
Capt. J. W. Evans, Madison, Wis.
Major C. M. Woodward, Mich.
Major H. E. Bradley, Milwaukee, Wis.
Capt. E. H. Grannis, Menominee, Wis.
Capt. J. B. Whiting, Janesville, Wis.
Surg.-Gen. F. H. Little, Muscatine, Iowa.
Major J. B. Edwards, Mauston, Wis.
Major F. W. Byers, Monroe, Wis.
Major C. F. W. Myers, Newark, N. J.
Capt. J. E. Garrey, Aurora, Ill.
Lt.-Col. H. M. Brown, Milwaukee, Wis.
Capt. H. E. Leach, Washington, D. C.
Major Geo. Halley, Kansas City, Mo.
Lt.-Col. E. Chancellor, St. Louis, Mo.
Major H. L. McKinstry, Zumbrota, Minn.

* Deceased.

Major D. B. Collins, St. Peter, Minn.
Major A. L. Mann, Elgin, Ill.
Capt. H. E. Mann, Marinette, Wis.
Major F. W. Wilkie, Oshkosh, Wis.
Major L. C. Carr, Cincinnati, Ohio.
Lt. Angelo Festorazzi, Mobile, Ala.
Major N. H. Henry, New York.
Major C. H. Cogswell, Cedar Rapids, Iowa.
Lt. O. D. Robinson, Georgetown, Del.
Lieut. J. P. Lukens, Wilmington, Del.
Lt.-Col. A. C. Bergen, Sioux City, Iowa.
Lt. Ralph Chandler, Milwaukee, Wis.
Surg.-Gen. J. W. Dupree, Baton Rouge, La.
Major W. H. H. Gable, Osage, Iowa.
Surg.-Gen. Scott Helm, Phœnix, Arizona.
Lt.-Col. L. B. Almy, Norwich, Conn.
Surg.-Gen. J. D. Griffith, Kansas City, Mo.
Major E. D. Godfrey, Camden, N. J.
Lt.-Col. H. L. Burrell, Boston, Mass.
Surg.-Gen. J. D. Bryant, New York.
Lt.-Col. R. A. Gray, Colusa, Cal.
Lt.-Col. W. R. Robeson, Pittsburg, Pa.
Major C. C. Wiley, Pittsburg, Pa.

Capt. S. O. Brumbough, Pittsburg, Pa.
Lt. W. H. Caine, Stillwater, Minn.
Surg.-Gen. V. T. M. Gillcuddy, Rapid City, S. D.
Major O. H. Marion, Boston, Mass.
Lt. C. F. Adams, Hackensack, N. J.
Lt. A. H. Ohmann-Dumesnil, St. Louis, Mo.
Major W. H. Egle, Harrisburg, Pa.
Major W. W. Hall, Springfield, Ohio.
Major J. W. Streeter, Chicago, Ill.
Major Chas. M. Robertson, Muscatine, Iowa.
Surg.-Gen. J. D. McGill, Jersey City, N. J.
Col. G. W. Terriberry, Patterson, N. J.
Lt.-Col. A. K. Baldwin, Newark, N. J.
Capt. Rhett Goode, Mobile, Ala.
Major J. N. Crocker, Chicago, Ill.
*Capt. J. T. Eggers, Kansas City, Mo.
Capt. L. R. Palmer, Ind.
Capt. C. G. Fuller, Chicago, Ill.
Surg.-Gen. R. B. Jessup, Vincennes, Ind.
Major M. C. Barkwell, Cheyenne, Wyo.
Lt. R. A. Foster, Washington, D. C.
Major Wm. Marshall, Milford, Del.
Lt. B. F. Bradbury, Norway, Me.
Major W. F. de Niedman, Pittsburg, Kan.
Capt. F. D. Bailey, Brooklyn, N. Y.
Lt. W. W. Owens, Savannah, Ga.
Capt. Henry Sherry, Chicago, Ill.
Major W. R. Longshore, Hazeton, Penn.
Major D. M. Griffith, Owensboro, Ky.

* Deceased.

Major J. A. Beebe, Tacoma, Washington.
Lt. C. D. Beasley, Brooklyn, N. Y.
Capt. Fritz-Hugh Edwards, Detroit, Mich.
Capt. D. J. Brannan, Flag Staff, Arizona.
Surg.-Gen. J. E. Halbert, Mound Landing, Miss.
Capt. J. Wallace Collins, Denver, Colo.
Lt. Orlando Kling, Denver, Colo.
Major J. R. Hereford, Jr., St. Louis, Mo.
Capt. J. W. Reber, St. Louis, Mo.
Lt. John B. Keber, St. Louis, Mo.
Capt. Frank W. Hendley, Cincinnati, Ohio.
Capt. Alvin W. Klein, Cincinnati, Ohio.
Major A. H. Briggs, Buffalo, N. Y.
Lt. T. C. Clark, Stillwater, Minn.
Major R. J. Fitzgerald, Minneapolis, Minn.
Capt. Chas. L. Lindley, New York, N. Y.
Major J. K. Weaver, Norristown, Pa.
Capt. G. L. Pritchett, Fawburg, Neb.
Major Salem Heilman, Sharon, Pa.
Capt. Arthur R. Jarrett, Brooklyn, N. Y.
Col. Louis W. Read, Norristown, Pa.
Major J. Wilks O'Neil, Philadelphia, Pa.
Lt. G. H. Halburstadt, Pottsville, Pa.
Major Jas. E. Silliman, Erie, Pa.
Major B. B. Griffith, Springfield, Ill.
Major Thomas C. Stunkard, Terre Haute, Ind.

Major Washington Hopkins Baker, Philadelphia, Pa.
Capt. W. H. Bergtold, Minominee, Mich.
Capt. Walter R. Hicks, Minominee, Mich.
Lt. Charles W. Adams, Kansas City, Mo.
Gen. Thomas Kittredge, Salem, Mass.
Major Chas. Hayes, Providence, R. I.
Major Wilmer R. Batt, Philadelphia, Pa.
Major W. F. Hake, Grand Rapids, Mich.
Major John W. Trader, Sedalia, Mo.
Lt. Franklin J. Kaufman, ——
Major John E. Clark, Detroit, Mich.

HONORARY MEMBERS.

Lt.-Colonel Charles R. Greenleaf, Medical Purveyor, Surgeon-General's Office, U. S. A., Washington, D. C.
Lt.-Col. C. H. Alden, U. S. A., Medical Director, Department of Dakota, St. Paul.
Col. B. J. D. Irwin, U. S. A , Medical Director, Dapartment of Missouri, Chicago.
Major E. M. McClellan, U. S. A., Department of Missouri, Chicago.
Major A. C. Girard, U. S. A., Fort Sheridan, Chicago.
Major W. H. Leighton, Soldier's Home, Milwaukee.
Brigadier-General Charles Sutherland, Surgeon-General U. S. Army.
Major John Van R. Hoff, U. S. A., Medical Department, Fort Riley, Kan.
Albert L. Gihon, Surgeon-General U. S. Navy.
Walter Wyman, Supervising Surgeon-General U. S. Marine Hospital Service.
Capt. Charles B. Ewing, U. S. A., Medical Department.
Capt. George T. Beall, U. S. A., Medical Department.
Maj. Daniel G. Caldwell, U. S. A., Medical Department.
Capt. Wm. O. Owen, Jr., U. S. A., Medical Department.
Maj. John H. McIntyre, Surgeon N. G., Ind. (retired)
Brigadier-General A. S. Barnes, Surgeon-General N. G., Mo. (retired).
1st Lieut. H. W. Sigworth, N. G., Iowa.
Capt. Chas. M. O'Connor, U. S. A., 7th Cavalry, St. Louis.
Capt. Frank M. Rumbold, Battery A, N. G., Mo.
Capt. L. A. Legard, U. S. A., Medical Department.
Dr. Von Coler, Surgeon-General, of Prussia.
Dr. Karl Ritter von Lotzbeck, Surgeon-General, of Bavaria.
Dr. von Fichte, Surgeon-General, of Wurtemberg.
Prof. Dr. William A. Roth, Surgeon-General, of Saxony.
Surgeon Major-General Sir William A. Mackinnon, Director-General of the Medical Staff of Great Britain.
Surgeon-General J. O'Nial, of Great Britain, (retired) ——

Mon. Léon Jean Colin, Médecin Inspecteur-Général of France.

Mon. Bérenger-Féraud, Director of the Marine Medical Service of France.

Mon. Merlin, Surgeon-General of the Marine Medical Service of France.

Dr. Joseph Podrazky, Chief of the Corps of Army Surgeons of Austro-Hungary.

Dr. G. Vanderlinden, Inspector-General of the Army Medical Service of Belgium.

Dr. G. Pecco, Inspector-General of the Army Medical Service of Italy.

Mon. R. Timmerman, Inspector of the Army Medical Service of Netherlands.

Dr. Remert, Director-General of the Army Medical Service of Russia.

Dr. Thien Hi, Surgeon-General of the Army of Siam.

Maj.-Gen. J. F. Thaulow, Surgeon-General of the Army of Norway.

E. M. Edholm, Surgeon-General of the Army of Sweden.

Col. A. Ziegler, Surgeon-General of the Army of Switzerland.

Surgeon-General Bergin, of the Dominion of Canada.

Surgeon F. W. Strange, I. S. C., Toronto, Canada.

Surgeon G. S. Ryerson, R. G., Toronto, Canada.